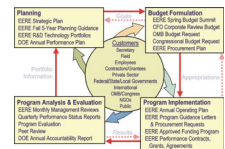
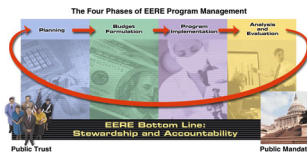




Chapter 1 Background



1.1 About DOE

The Department of Energy conducts programs relating to energy resources, national nuclear security, environment quality and science. In each of these areas, the United States is facing significant challenges. Our economic well-being depends on the continuing availability of reliable and affordable supplies of clean energy. Our Nation's security is threatened by the proliferation of weapons of mass destruction. Our environment is under threat from the demands of a more populated planet and the legacies of 20th Century activities. Science, and the technology derived from it, offer the promise to improve the Nation's health and well-being and broadly expand human knowledge.

In conducting its programs, the Department of Energy (DOE) employs unique scientific and technical experts, including 30,000 scientists, engineers, and other technical staff in a complex of outstanding national laboratories that have a capital value of over \$45 billion. Through its multidisciplinary research and development activities and its formidable assemblage of scientific and engineering talent, DOE focuses its efforts on four programmatic business lines:

- Energy Resources - promoting the development and deployment of systems and practices that provide energy that is clean, efficient, reasonably priced, and reliable.
- National Nuclear Security - enhancing national security through military application of nuclear technology and by reducing global danger from the potential spread of weapons of mass destruction.
- Environment Quality - cleaning up the legacy of nuclear weapons and research activities, safely managing nuclear materials, and disposing of radioactive wastes.
- Science - advancing science and scientific tools to provide the foundation for DOE's applied missions and to provide remarkable insights into our physical and biological world.

In support of the above four business lines, DOE provides management services to ensure that the technical programs can run efficiently. Our Corporate Management area deals with organizational and management challenges that we must address to better serve our customers, and ultimately, U.S. taxpayers, in an effective and efficient manner. Within Corporate Management, we strive for excellence in the Department's environment, safety, and health practices, together with effective management systems and efficient business practices.

The DOE Mission

To advance the national, economic, and energy security of the United States; to promote scientific and technological innovation in support of that mission; and to ensure the environmental cleanup of the national nuclear weapons complex.

The DOE Vision

The Department of Energy, through its leadership in sciences and technology, will continue to meet the Nation's needs in energy, environmental quality, and national security by being:

- A partner with Congress, other agencies, and stakeholders to develop and implement policies, legislation, and regulations that promote national security and address our energy and environmental needs in a balanced manner.
- A key contributor to ensure that the United States has a flexible, clean, efficient, accessible, and affordable system of energy supply with minimal vulnerability to disruption.
- A vital contributor to reducing the global nuclear danger through our national nuclear security, nuclear safety, and nonproliferation activities.
- A responsible steward of nuclear weapons and materials, cleaning up DOE sites, decommissioning our facilities, stabilizing nuclear materials, managing and disposing of waste, and preventing pollution.
- A major partner in world-class sciences and technology through our national laboratories, research centers, university research, and our educational and information dissemination programs.

- An employer noted for providing a safe and secure workplace, recognized for management excellence, and acknowledged for delivering results.

DOE Core Values

The Department will succeed only through the efforts of its employees. Our beliefs and values motivate our behavior and set standards for our individual and collective performance. The core values of the Department of Energy guide our activities as we strive to fulfill our mission.

1. We are public servants and are customer-oriented.
2. We value public safety and respect the environment.
3. We believe people are our most important resource and that they should be treated with fairness, respect, and dignity.
4. We value creativity and innovation.
5. We are committed to excellence.
6. We work as a team and advocate teamwork.
7. We recognize that leadership, empowerment, and accountability are essential.
8. We pursue the highest standards of ethical behavior.

The Department's Background

DOE's History. The Department of Energy has its roots in the Manhattan Project of the U.S. Army Corps of Engineers, which was established 1942 to manage development of the atomic bomb. After World War II, Congress created the Atomic Energy Commission in 1946 to direct the design, development, and production of nuclear reactors and, beginning in 1954, for regulating the commercial nuclear power industry.

In 1974, Congress replaced the Atomic Energy Commission with two new agencies: the Nuclear Regulatory Commission and the Energy Research and Development Administration. The latter was created to manage the nuclear weapons, naval reactors, and energy development programs, and to research the environmental, biomedical, and safety aspects of energy technologies.

In 1977, Congress created the Department of Energy, which brought together functions and responsibilities of the Energy Research and Development Administration, the Federal Power Commission, and the Power Marketing Administrations under one cabinet-level department.

DOE's Present Scope. The Department of Energy develops and implements energy policy and manages a vast array of technical programs. The Department's nationwide complex consists of headquarters and field organizations, national laboratories, nuclear weapons production plants, power marketing administration, and special-purpose offices. DOE has almost 16,000 Federal employees and over 100,000 contractor employees working at over 50 major installations in 35 states.

The DOE complex includes unique capabilities in science and engineering that we apply to meet the Department's goals in energy resources, national nuclear security, environmental quality, and science. Powerful accelerators, light sources, neutron beam facilities, plasma and fusion science facilities, genome centers, hydrodynamic testing facilities, and advanced computational centers are just some of the major instruments of science that distinguish DOE's capabilities and enhance the Nation's science base.

References:

- *U.S. Department of Energy Strategic Plan*, Washington, D.C., September 2003.
<http://strategicplan.doe.gov>
- *The Origins of Our Department*,
http://ma.mbe.doe.gov/me70/history/DOE's_history.htm

1.2 About EERE

1.2.1 Brief History of EERE and Its Predecessor

Through almost 30 years of legislative, administrative, and market decisions and six presidential administrations, U.S. energy policy has remained consistent: to ensure clean, affordable, and diverse energy supplies and to use them efficiently.

In 1971, the Nixon Administration created an Office of Energy Conservation to supplement the Department of the Interior's coal, oil, and natural gas research and development programs. The Administration also initiated Federal programs for solar heating, solar cooling, and geothermal research in the National Science Foundation. Two years later, during the energy "crisis" of 1973, President Nixon's "Project Independence" engendered a multi-agency wind energy program involving, among others, the Federal Energy Administration, the National Aeronautics and Space Administration, and the Department of Agriculture.

In January 1975, the Ford Administration created the Energy Research and Development Administration (ERDA) to focus the Federal government's energy research and development activities within a unified agency that could promote the speedy development of various energy technologies. Congress supported this with the Energy Policy and Conservation Act of 1975. In 1977, President Carter merged ERDA and the Federal Energy Administration and placed it within the Department of Energy (DOE) to unify the government's energy research and development functions with its energy policy and regulation functions. The National Energy Conservation Policy Act of 1978 strengthened the new agency's efforts.

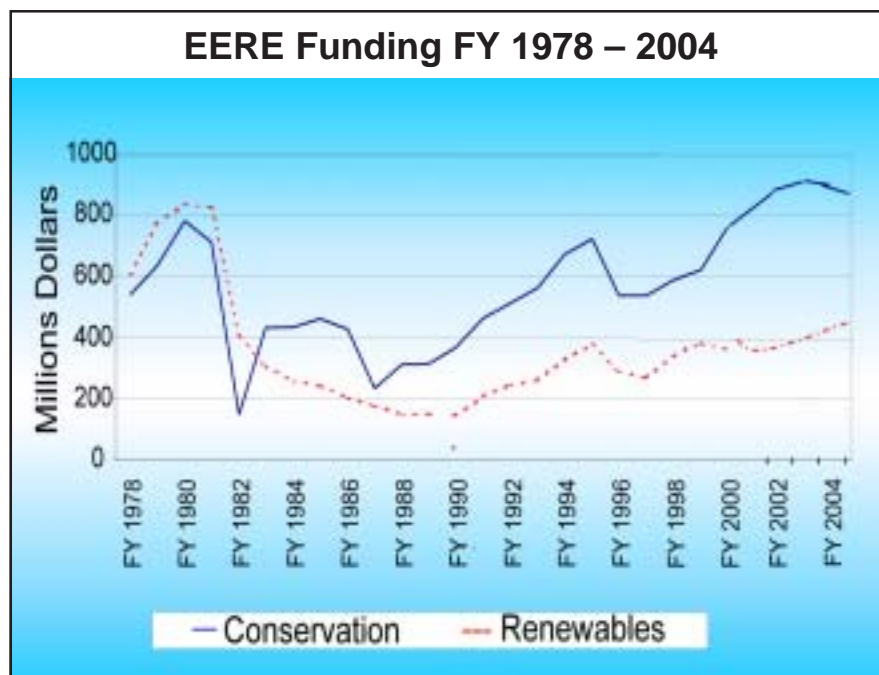
After abandoning an initial plan to abolish DOE, the Reagan Administration scaled back the energy applied research and development efforts, and narrowed the scope of EERE's predecessor organization (Office of Conservation and Solar Energy) to basic, long-term, very high-risk energy R&D. The Reagan Administration also eliminated the remaining energy regulation programs.

Applied research, development, and deployment (RD&D) activities were revived early in the Bush Administration. A detailed, top-down and bottom-up process consisting of public hearings, energy modeling, departmental task forces, and involvement of other governmental bodies yielded a new compre-

hensive national energy strategy in 1991. The loudest messages heard were to increase productivity in every program office of energy and to view energy supply and use as a system. Through the Energy Policy Act of 1992, Congress supported the return to applied RD&D, using partnerships with non-Federal stakeholders.

The Clinton Administration continued to increase the level of the applied, research, development and deployment activities. It promoted industry-government-consumer partnerships to accelerate demonstration and deployment of advanced technologies. Such partnerships incorporating individual technologies in a systems approach, for example, the Partnership for a New Generation of Vehicles (PNGV), Bioenergy, and Million Solar Roofs, received special emphasis.

Over EERE's lifetime, program funding levels have risen and fallen with each President's and/or Congress' view of the Federal government's role in energy technology development and deployment. Funding grew from fiscal years 1973 through 1981 during periods of "energy crisis," emphasis on national security, and an activist government role. Program funding decreased significantly during fiscal years 1982-1989 with the Reagan Administration's emphasis on a hands-off government role. Funding growth returned after 1991 during stable energy markets, only to decline again in the 1994-1995 period.



1.1.2 EERE Mission, Vision, Goals, and Strategies

The Office of Energy Efficiency and Renewable Energy (EERE) leads the Nation in the research, development, and deployment (RD&D) of affordable, advanced clean energy. The term "clean energy" describes energy-efficient technologies and practices that use less energy, and alternative power and delivery technologies that produce and transport power and heat more cleanly than conventional sources.

This leadership is provided by a Federal workforce of more than 500 individuals and is principally organized around eleven programs. EERE's FY 2003 budget request of \$1.31 billion comprises approximately 6 percent of the U.S. Department of Energy (DOE) budget request. EERE's mission is advanced through a strong and balanced RD&D portfolio of clean energy technologies and practices, along with support for critical policies and markets.

The core EERE family consists of Headquarters' staff, its Golden Field Office in Colorado, six Regional Offices, and its own National Renewable Energy Laboratory. In addition the Department avails itself of collaborative opportunities with other National Laboratories, other Federal agencies, State energy offices, industry, universities, non-government organizations (NGOs), and other stakeholders. The objective in each case is to pursue research and develop advanced energy technologies and practices that will lead to successful deployment and market penetration. These activities, combined with private sector efforts, play a critical role in providing clean, abundant, reliable, and affordable energy for all our citizens.

EERE Mission and Vision

EERE's mission is to:

- Strengthen America's energy security, environmental quality, and economic vitality through public-private partnerships that:
 - Promote energy efficiency and productivity
 - Bring clean, reliable and affordable energy technologies to the marketplace
 - Make a difference in the everyday lives of Americans by enhancing their energy choices and their quality of life

This mission is consistent with the Federal government's role of investing in technologies and practices that are critical to the Nation's strategic interests, but that do not receive adequate research and development (R&D) investment from the private sector. EERE also works with stakeholders to develop policies and programs to facilitate the deployment of advanced clean energy technologies and practices.

Energy plays a vital role in sustaining and improving our quality of life, and will do so in the years and decades to come. The energy choices we make today can help us continue our Nation's progress toward realizing a **vision** for :

- A prosperous future where energy is clean, abundant, reliable, and affordable.

Specifically, we envision an energy future where:

- ***Our cars and trucks*** will be more efficient and will be powered by a variety of clean domestic fuels and technologies that free us from dependence on foreign supplies of energy;
- ***Low-income Americans*** will pay less for the energy they use to heat, cool, and power the energy-efficient buildings they call home;
- ***Our industry*** will run on a diverse portfolio of clean, domestic energy sources, and American companies will be the technology leaders who bring these advancements to the world;
- ***Our electricity infrastructure*** will be revitalized, robust, and more reliable by widely deploying technologies that achieve new levels of industrial and commercial efficiency and by improving electricity transmission technologies;
- ***Our homes, businesses, and communities*** will generate much of their own power from renewable resources and sell excess energy back to local generators;
- ***Our factories*** will become energy parks that both use and make energy, while our most energy-intensive industries will become cleaner, consume fewer resources, and become more competitive;

- **Rural America** will be revitalized through the sustainable production of biomass feedstocks for biorefineries that produce power, fuels, chemicals, and other valuable products; and
- **The Federal government** will lead the Nation in conserving energy and using renewable energy resources.

EERE Goals and Strategies

Realizing our vision of "a prosperous future where energy is clean, abundant, reliable, and affordable" will require a concerted effort in both the public and private sectors, including all levels of government. EERE will play a limited but essential role in moving the Nation towards this energy vision, and has identified nine goals to help ensure that its resources are well-focused. Eight of the goals address recommendations made in the President's National Energy Policy, while the ninth goal addresses elements contained in the President's Management Agenda. Taken together, these goals provide the basis for realizing EERE's vision.

Goals	Situation	Strategies	Success Indicators
Goal 1. Dramatically Reduce, or Even End, Dependence on Foreign Oil	Our transportation sector is nearly 97 percent dependent on oil and more than 50 percent of the oil is being imported, much of it from the Middle East. At predicted levels of oil production and consumption, America will be even more dependent on foreign oil imports in the years ahead, making the Nation even more vulnerable to oil disruptions and price spikes.	<ul style="list-style-type: none"> • Reduce petroleum consumption in cars and trucks by developing technologies that economically increase their efficiency without sacrificing performance; • Develop non-petroleum fuels and related infrastructure technologies through innovative research and development (R&D) investments; and • Develop a clean and affordable path to a hydrogen energy future by working with industry and other Federal agencies to identify and research hydrogen technology pathways. 	By 2020, vehicles are available that double fuel economy at an incremental cost that is paid back within three years through fuel cost savings; by 2030, affordable hydrogen vehicle technology options are widely available for Americans.
Goal 2. Reduce the Burden of Energy Prices on the Disadvantaged	Low-income families spend a disproportionately high percentage of their income on energy, which impacts their spending on food, housing, medical care, and education, and also increases their vulnerability to high and volatile energy prices.	<ul style="list-style-type: none"> • Increase the impact and cost-effectiveness of the Weatherization Program by implementing the <i>Weatherization Plus</i> Strategic Plan; and • Achieve greater energy savings by expanding the scope of the Weatherization Program to include a whole-house approach that incorporates advanced energy efficiency technologies. 	Weatherize 1.25 million houses during the next 10 years.

Goals	Situation	Strategies	Success Indicators
Goal 3. Increase the Viability and Deployment of Renewable Energy Technologies	Renewable energy technologies currently account for about 10 percent of the Nation's energy production. Domestic renewable energy resources (i.e., solar, wind, geothermal, biomass, and hydro) are vast and provide a significant opportunity for the United States to enhance and diversify its energy supplies.	<ul style="list-style-type: none"> • Improve performance and reduce the costs of renewable energy technologies by investing in R&D and conducting field tests; and • Facilitate market adoption of renewable energy technologies by partnering with private companies to demonstrate technologies in commercial energy systems. 	Renewable energy is widely cost-competitive within the next 20 years.
Goal 4. Increase the Reliability and Efficiency of Electricity Generation, Delivery, and Use	The importance of reliable and secure electricity is growing in our increasingly information-based economy. New technologies and system designs will be needed to modernize our electricity infrastructure and to provide more reliable power, especially during periods of peak demand.	<ul style="list-style-type: none"> • Complete development and testing of a portfolio of distributed generation and thermally-activated technologies that show an average 25 percent increase in efficiency (over technology available in 2000) by 2008; • Demonstrate the capability to double the power carrying capacity of transmission and distribution wires by 2008, compared to that available in 2000; • Develop a portfolio of technologies and software tools by 2012 that allows real-time monitoring, understanding, and control of the transmission and distribution system by identifying more than 90 percent of incipient system disturbances and cueing the operator for action as necessary to mitigate disturbances; and • Demonstrate the feasibility of integrated systems in three new customer classes, which would achieve 70 percent efficiency and customer payback in less than four years (by 2008), assuming commercial-scale production. 	A significant portion of the Nation's industrial, commercial, and residential heat and power needs can be served by 2030 with clean, reliable, and efficient distributed power systems that also provide strength and stability to the national transmission grid.
Goal 5. Increase the Energy Efficiency of Buildings and Appliances	Although significantly more efficient than in the past, appliances and buildings still account for about two-thirds of U.S. electricity use, and an even greater portion of peak electricity consumption. Advanced energy-efficiency technologies provide an opportunity for consumers to enhance the comfort and quality of their homes and workplaces, yet use less energy.	<ul style="list-style-type: none"> • Improve the performance and reduce the costs of buildings by investing in R&D that advances the energy efficiency of building component technologies; • Improve the performance and reduce the costs of buildings by investing in R&D that improves whole-building energy efficiency through improved design strategies, tools and technologies, and practices for new and existing homes and buildings; 	Cost-competitive new buildings, which create as much energy as they use, are widely available within the next 20 years.

Goals	Situation	Strategies	Success Indicators
Goal 5. Increase the Energy Efficiency of Buildings and Appliances (continued)		<ul style="list-style-type: none"> • Integrate renewable and efficiency technologies to enable construction of marketable net zero-energy buildings; • Increase the energy efficiency of buildings, equipment, and appliances through prioritized, collaborative development of test procedures and energy efficiency standard rulemakings; and • Improve the energy efficiency of new buildings through development and certification of model energy building codes, and provision of tools, training, and technical assistance to building code officials and builders. 	
Goal 6. Increase the Energy Efficiency of Industry	The competitiveness of our most energy-intensive industries is particularly sensitive to energy prices. Advanced energy-efficiency technologies help mitigate the impacts of price swings on industry, thereby increasing their economic competitiveness in global markets. At the same time, industry provides unique opportunities to cogenerate heat and electricity, thus reducing the need for new electric power plants.	<ul style="list-style-type: none"> • Facilitate broader market adoption of energy-efficiency technologies and practices by conducting energy assessments, developing software to analyze and optimize plant systems, and demonstrating advanced energy-saving technologies; • Support high-risk, high-return R&D identified in the technology roadmap to reduce manufacturing energy intensity in U.S. industry by working with industry partners and other Federal programs; and • Support leading-edge R&D in crosscutting technologies, such as advanced materials and intelligent sensors and controls that can enable efficiency improvement in multiple industries. 	Energy-efficient technologies are widely available within the next 20 years, due to EERE's private-public partnerships, that enable America's energy-intensive industries to significantly increase their productivity without increasing their energy consumption.
Goal 7. Spur the Creation of a Domestic Bioindustry	America possesses vast agricultural and forest resources that offer the Nation a tremendous opportunity to use domestic, sustainable resources to provide fuel, power, and chemical needs from plants and plant-derived materials. The integrated industrial biorefineries of the future have the potential to be an integral part of America's energy economy.	<ul style="list-style-type: none"> • Advance technologies for converting biomass to fuels, power, and products (chemicals and materials) through R&D involving industry partners; • Advance technology for biomass harvesting, storage, and handling to support viable industrial biorefineries through R&D partnerships; and • Condition markets for significant penetration of biomass-based technologies by working with appropriate entities to encourage innovative State and local incentives, increased consumer acceptance, and increased support from farmers and industry. 	By 2020, the multiple benefits of coproducing bio-based products, fuels, heat, and power, result in a growing number of industrial biorefineries that are part of a thriving bioindustry.

Goals	Situation	Strategies	Success Indicators
Goal 8. Lead by Example through Government's Own Actions	The U.S. government is the world's largest single user of energy. With about 500,000 buildings and locations throughout the country, it also provides an ideal venue for showcasing and documenting energy opportunities.	<ul style="list-style-type: none"> • Reduce energy intensity in Federal buildings by providing information, training, technical assistance, and alternative financing for efficiency improvements in new construction, building retrofits, operations and maintenance, and utility load management; • Increase the use of renewables by promoting renewable technologies at Federal sites, enabling the procurement of renewable power and alternative fuels, and facilitating the siting of renewable generation on Federal lands; and • Promote the procurement of highly efficient energy-consuming equipment and appliances by developing and promoting Federal product efficiency guidelines and labeling. 	By 2005, Federal agencies obtain 2.5 percent of their electricity from new renewable resources; by 2010, energy intensity in standard Federal buildings is reduced by 35 percent relative to the 1985 baseline.
Goal 9. Change the Way We Do Business	Excellence in business management is essential to accomplishing the EERE mission and goals. Clear guidance on business management has been provided by the National Academy of Public Administration, EERE's <i>Strategic Program Review</i> , and by the <i>President's Management Agenda</i> . EERE's management challenges include the strategic management of human capital, competitive sourcing, improved financial performance, expanded electronic government, budget and performance integration, and a focus on program management.	<ul style="list-style-type: none"> • Full implementation of EERE's Strategic Management System (SMS), which provides an integrated corporate approach toward planning, budget formulation, program implementation, and program evaluation across the entire organization; • Implementation of the EERE Program Management Initiative, which is a management curriculum that provides knowledge-based systems for all Program Managers, resulting in a fully certified and trained program management corps; • Complete implementation of a comprehensive reorganization that focuses on performance, reduces organizational layers, and eliminates inefficient operational redundancies; and • Implementation of OMB's Applied R&D Investment Criteria, a set of objective, performance-based metrics that will help ensure that EERE program dollars are used effectively and efficiently with clear program "off-ramp" or termination points. 	EERE more effectively implements its budget and aligns its workforce with programmatic needs; EERE is recognized by external stakeholders, such as the Office of Management and Budget (OMB) and Congress, as a model for operating efficiency and effectiveness.

References:

- National Energy Policy, Report of the National Energy Policy Development Group, Washington, D.C., May 2001. <http://www.whitehouse.gov/energy/>
- Clean, Abundant, Reliable, and Affordable Energy, Office of Energy Efficiency and Renewable Energy Strategic Plan, DOE/GO-102002-1649, Washington, D.C., Oct 2002. http://www.eere.energy.gov/office_eere/pdfs/fy02_strategic_plan.pdf

1.2.3 The National Energy Policy and EERE's Role

The National Energy Policy (NEP), published in May 2001, sets forth the framework for the Nation's energy policy. The NEP goals, objectives, and recommended actions form a blueprint for the specific programs, projects, initiatives, investments, and other actions that the Federal government will develop and undertake in the area of energy. NEP includes actions toward increasing the diversity of U.S. energy supply and fuel choices and improving energy productivity. These include bringing renewable energy sources into the market, strengthening domestic production of oil and gas, and increasing the efficiency of both power and end-use technologies.

EERE has developed priorities that flow from the NEP goals, which are also reflected in DOE's Annual Performance Plan goals for EERE. DOE's Annual Performance Plan stresses the importance of scientific and technological advancements that will help accomplish the policy goals. See chart below for details.

National Energy Policy Goals and EERE's Role

National Energy Policy Goals

- Increase energy supplies
- Modernize our energy infrastructure
- Modernize conservation
- Accelerate the protection and improvement of the environment
- Increase our Nation's energy security

EERE Priorities

- Develop improved and lower-cost wind, solar, bioenergy, and other domestic renewable energy sources
- Address opportunities to improve the overall efficiency of energy systems, reduce peak load stress on these infrastructures, foster improvements in our electricity and bioenergy infrastructures, and explore hydrogen infrastructure options
- Constitute the majority of Federal research and development efforts to improve the energy performance and energy productivity of the American economy
- Provide innovative means to improve the environment, both by reducing the amount of energy and resources needed by our economy and by developing cleaner energy sources
- Reduce transportation oil needs, help improve infrastructure reliability, and help dampen fluctuating energy prices and energy trade deficits that can harm the economic vitality of our Nation

DOE FY 2004 Annual Performance Plan Goals for EERE

- Use public-private partnerships to promote energy efficiency and productivity technologies in order to enhance the energy choices and quality of life of Americans in 2020 relative to 2000 by: reducing the oil intensity of the U.S. Economy by 25 percent (compared to 23 percent without EE programs); reducing energy intensity in the U.S. economy by 32 percent (compared to 28 percent without EE programs); and, reducing the need for additional electricity generating capacity by 10 percent (compared to the case without EE programs).
- Use public-private partnerships to bring cleaned, more reliable, and more affordable energy technologies to the marketplace, enhancing the energy choices and quality of life of Americans in 2020, relative to 2000, by: increasing the share of renewable energy to 10 percent (compared to 8 percent without EE programs); increasing the share of renewable-generated electricity to 12 percent (compared to 8 percent without EE programs); and, doubling the share of capacity additions accounted for by distributed power, which increases distributed generation to 11 percent of all electricity generation (compared to 8 percent without EE programs).
- Reduce the burden of energy prices on low-income families by working with state and local agencies to weatherize at least 123,000 homes per year from 2003 through 2005.

Within DOE, working under the framework of these goals, the Offices of Energy Efficiency and Renewable Energy, Fossil Energy, and Nuclear Energy, Science and Technology lead Departmental efforts. These offices manage the RD&D of advanced energy technologies in their respective areas primarily through partnerships with industry, Federal and non-Federal laboratories, universities, and State and local government agencies. DOE also leads Federal agencies in helping bring competition to the electricity industry.

Other support for NEP and DOE goals comes from the Energy Information Administration, which publishes energy-related information necessary for informed consumer, market, and policy decisions. The Power Marketing Administration sells and distributes more than \$3 billion of electric power generated at Federal hydroelectric plants. DOE's Office of International Affairs and Office of Policy lead many policy-related activities supporting the energy goals. In addition, the Office of Security and Emergency Operations provides support in the prevention of energy disruption and infrastructure failure.

To ensure further that its R&D remains focused on its goals, the Department developed an Energy Resources R&D Portfolio, released in February 2000. The portfolio helps DOE to align its technology investments with broader national policy goals and plan for future investments through technology “roadmapping.” The portfolio integrates activities of EERE and DOE’s Office of Fossil Energy, Nuclear Energy, Science and Technology, and Security and Emergency Operations to support NEP and DOE goals. EERE supports all of the portfolio’s R&D areas.

In addition, planning efforts outside DOE helped set the context for EERE and other DOE programs. The report *Energy R&D: Shaping Our Nation's Future in a Competitive World*, conducted by leading energy experts from industry, academia, and research and commissioned by the Secretary of Energy's Advisory Board, was published in 1995. The experts recommended that DOE manage a diverse energy R&D investment portfolio through: (1) a balance of basic research and applied R&D (including industry co-funded demonstrations), (2) near and long-term R&D to provide continuing return on investment and to contribute to the health and vitality of domestic energy industries, and (3) a continuing commitment to support energy efficiency and renewable energy. DOE has aligned its Energy Resources R&D Portfolio with the key program recommendations of this report.

Also, a study conducted by an expert panel appointed by the President's Council of Advisors on Science and Technology, *The Federal Energy Research and Development for the Challenges of the Twenty-First Century*, was published in June 1999. The committee recommended specific initiatives to bolster Federal efforts on international energy cooperation under four broad headings.

Three of the four areas specifically relate to EERE programs and include:

- (1) Foundations of energy innovation and cooperation, with emphasis on capacity building, energy sector reform, clean energy technology demonstrations and cost buy-down, and financing.
- (2) Technologies for increased efficiency of energy end use, with emphasis on buildings and appliances, small vehicles and buses, energy-intensive industries, and co-generation of electricity and other energy forms.
- (3) Technologies for cleaner and more efficient energy supply with emphasis on biomass and other renewable energy forms, fossil-fuel decarbonization, and carbon sequestration technologies.

This, in combination with the National Academy of Public Administration Report entitled *A Review of Management in the Office of Energy Efficiency and Renewable Energy (March 2000)*, and the EERE-conducted comprehensive "top-to-bottom" Strategic Program Review (September 2001) encouraged EERE to completely rethink and overhaul its management and business model.

References:

- National Energy Policy, Report of the National Energy Policy Development Group, Washington, D.C., May 2001.
<http://www.whitehouse.gov/energy/>
- DOE Annual Performance Plan for FY 2004.
<http://www.mbe.doe.gov/budget/04budget/content/perfplan/perfplan.pdf>
- Energy Resources, DOE Research and Development Portfolio, Volume 1 of 4, U.S. Department of Energy, Washington, D.C., February 2000.
- Others in the text.

1.2.4 The EERE Organization and Mandate For Reform

The EERE organization has several Headquarters and Field elements. EERE Headquarters, which is entirely located in the Forrestal Building, has responsibility for program planning, program management, resource management, budgeting, and evaluation. The Field elements, consisting of the Golden Field Office and six Regional Offices, primarily carry out project management activities. The EERE portfolio also consists of renewable energy and energy efficiency R&D facilities in the Denver metropolitan region at the National Renewable Energy Laboratory.

President's Management Agenda

In the summer of 2001, the Administration released the *President's Management Agenda* for FY 2002, which laid out the blueprint for management improvements throughout the Federal government. It essentially called for:

- Agencies to become flatter and more responsive;
- The emphasis on process to be replaced by a focus on results;
- The elimination of overlapping functions, inefficiencies, and turf battles; and
- A strengthening of the knowledge, skills, and abilities of Federal workers to meet the needs and expectations of their ultimate clients—the American people.

This, in combination with the National Academy of Public Administration Report titled *A Review of Management in the Office of Energy Efficiency and Renewable Energy (March 2000)* and the *EERE Strategic Program Review (April 2002)*, provided EERE with findings and recommendations that assisted in the redesign of EERE's management and business model.

EERE's New Management Structure

On July 1, 2002, EERE replaced its old stovepipe and fragmented management structure with a new streamlined, integrated, and focused one which emphasizes strong program management for better performance. The new structure is built on 11 programs that are the means by which EERE accomplishes its goals, and a

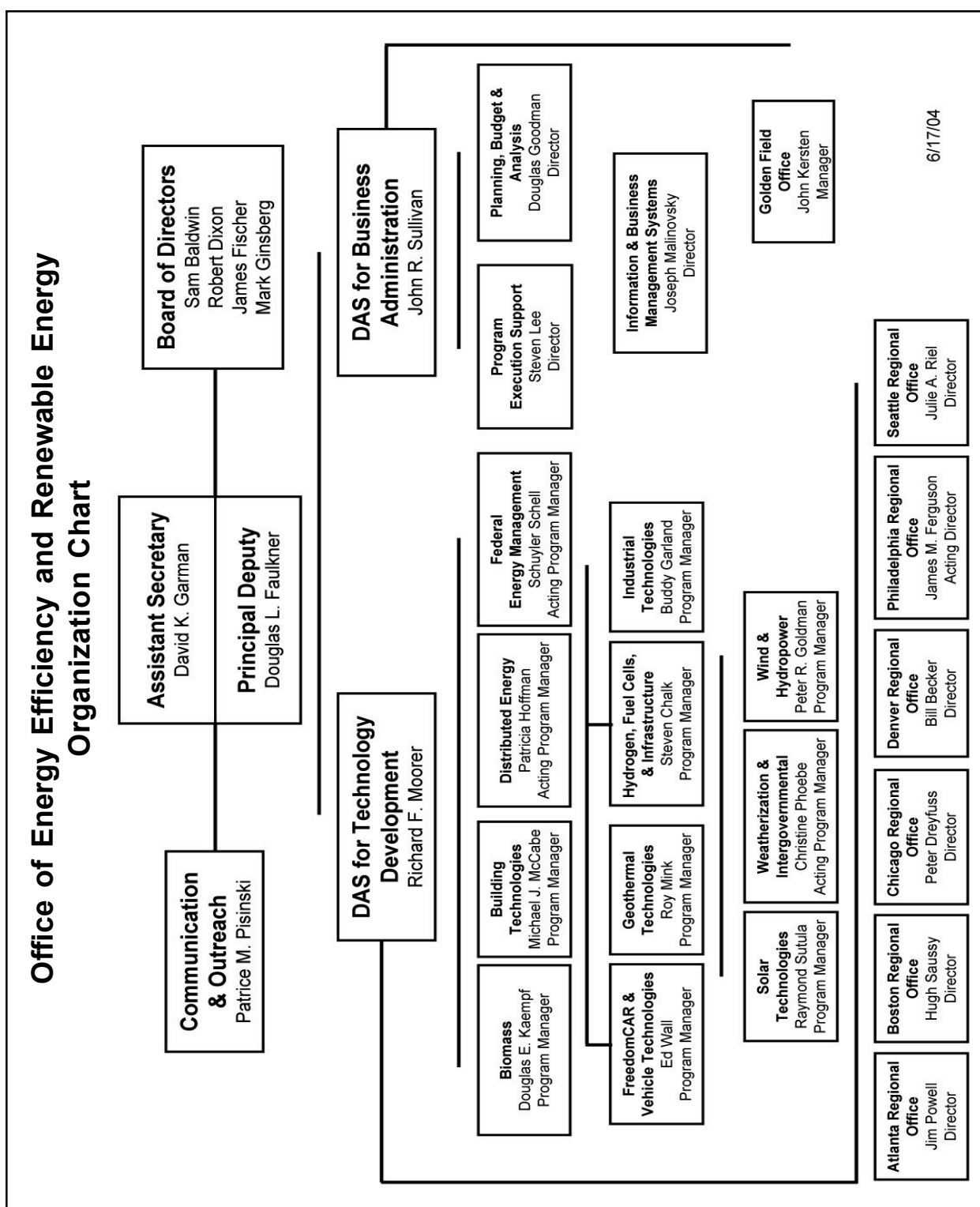
business administration office that supports the programs. The new organizational structure streamlined previously fragmented functions and reduced the layers between Program Managers and top management, thereby increasing the authority and accountability of the Program Managers. This has resulted in fewer high- and mid-level managers in EERE, as well as fewer offices and programs.

The new organization was created in partnership with the employees' union, and with service to stakeholders and the public in mind. The goal was to create efficient program delivery with maximum accountability of personnel and transparency in budget accountability.

A unique feature of the new structure is the creation of a Board of Directors to oversee EERE initiatives and to strengthen public-private partnerships. In addition to providing expert advice and counsel to the Assistant Secretary, the Board helps shape EERE corporate policy, strategy, and budget development; advises the Assistant Secretary on all energy-related U.S. and international technical, economic, and policy issues; represents EERE to stakeholders and others in an outreach capacity; and provides advice to ensure senior technical and peer review of EERE's programs.

EERE's new structure is being recognized as a front-runner for implementing the *President's Management Agenda*. This new structure will allow EERE to implement needed changes, which will enable EERE to:

- Improve organizational efficiency;
- Remove artificial organizational layers;
- Enhance competitive sourcing, fiscal accountability, and information technology services;
- Focus on programs and empower the Program Manager, resulting in greater accountability;
- Focus the Program Manager on results rather than processes;
- Integrate performance planning and budgeting; and
- Allow the Assistant Secretary to better oversee program and business operations.



An updated EERE organizational chart can be found at
http://www.eere.energy.gov/office_eere/organization.html.

1.2.4.1 Budget and Staffing

Budget

The U.S. Congress funds EERE in order to promote energy security through reduced dependence on foreign oil, to create environmentally-benign alternative energy sources, and to increase the economic competitiveness of U.S. energy technology exports. Although funding levels have fluctuated over the past two decades, Congressional appropriators have recognized, to varying degrees, EERE's strong and balanced research, development, and deployment (RD&D) efforts into clean and efficient energy technologies and practices, as well as its support for critical policies and markets. This work is a critical part of the Federal government's responsibility of investing in high-risk, high-value RD&D that is essential to the Nation's future and would not be independently conducted by the private program office.

Interior & Energy and Water Development Appropriations

EERE's budget authority is derived from two Congressional Subcommittees. The Interior Appropriation Subcommittee supports EERE's efficiency efforts under the budget line "Energy Conservation." These funds comprise roughly two-thirds of EERE's budget. The Energy and Water Development (EWD) Appropriation Subcommittee supports the remainder of EERE's work on renewable energy under the budget line "Energy Supply." These funds total about one-third of EERE's budget. Some crosscutting initiatives are funded jointly by both bills.

1.2.5 Headquarters Corporate Offices

1.2.5.1 Office of the Assistant Secretary

The mission of the Office of the Assistant Secretary is to formulate and direct programs designed to increase the production and utilization of renewable energy and improve energy efficiency through support of research, development, and technology transfer. It also has the responsibility for administering statutorily mandated assistance programs. In addition, the Office brings an outside focus to bear in renewable energy and energy efficiency issues by involving external constituencies. The Assistant Secretary exercises executive direction over the Principal Deputy Assistant Secretary, the EERE Board of Directors, the Office of Communications and Outreach, the Office of the Deputy Assis-

tant Secretary for Technology Development, and the Office of the Deputy Assistant Secretary for Business Administration. The Office is responsible for achieving proper coordination with other DOE principals, offices, and administrations directly concerned with the activities or effects of activities undertaken by EERE.

1.2.5.2 EERE Board of Directors

The mission of the EERE Board of Directors is to provide expert advice and counsel to the Assistant Secretary with respect to the full range of EERE issues and activities. The Board shall provide guidance for the policy development process, for budget development and execution processes, for procurement and contracting processes, for resource management and for the technology programs. The Board shall provide corporate leadership in working with the private sector and other government entities to develop and improve public-private partnerships. At the direction of the Assistant Secretary, members shall represent EERE and the Assistant Secretary in dealing with senior officials in the Executive Branch of the Federal government; members of Congress and their staffs; senior officials of State governments, regional authorities, and other government entities; industry and association executives; and foreign government officials.

1.2.5.3 Office of Communications and Outreach

The mission of the Office of Communications and Outreach (OCO) is to provide communication and outreach activities to EERE corporate customers and stakeholders to facilitate meeting EERE's stated corporate mission and goals. The Office develops and disseminates information about the budget and EERE policies and programs, gathers market information of high relevance to EERE decision-making, coordinates corporate-level stakeholder interactions, and conducts corporate-level customer surveys on EERE performance.

1.2.6 Headquarters Program and Business Management Offices

1.2.6.1 Office of Deputy Assistant Secretary for Technology Development

The mission of the Office of the Deputy Assistant Secretary for Technology Development (DAS-TD) is to provide effective pro-

gram management leadership for all of EERE's energy efficiency and renewable energy programs. The DAS-TD's efforts to accomplish this mission are aligned with the National Energy Policy, the Department of Energy's Strategic Plan, EERE's Strategic Plan, and Congressional appropriations. The DAS-TD is supported by 11 Program Offices, one for each EERE program. These Program Offices will change as new programs are added and current programs are ended. The DAS-TD is also supported by senior staff who provide expert technical and program management advice and a quality review of each program's planning and performance. The DAS-TD also oversees the activities of the 6 EERE Regional Offices that provide program implementation support. The DAS-TD ensures the integration and coordination of activities among the programs, the Regional Offices, and other DOE offices and Federal agencies.

1.2.6.1.1 11 Program Offices

Biomass Program

Biomass offers America a tremendous opportunity to use domestic and sustainable resources to provide its fuel, power, and chemical needs from plants and plant-derived materials. The Biomass Program includes major programs for developing and improving technology for biomass power; for making biofuels such as ethanol (from biomass residues as well as grain) and renewable diesel; and for making plastics and chemicals from renewable, biobased materials. The Biomass Program is also the lead agency in the multi-agency Biomass Research and Development Initiative working to coordinate and accelerate all federal biobased products and bioenergy research and development in accordance with the Biomass Research and Development Act of 2000.

The mission of the Office of the Biomass Program (OBP) is to foster research and development on advanced technologies to transform our abundant biomass resources into clean, affordable, and domestically-produced biofuels, biopower, and high-value bioproducts for improving the economic development and enhancing the energy supply options of the United States.

Further, OBP will build its investment portfolio on detailed market and technology analysis, in collaborations with leaders and technology experts from industry, academia, and the national laboratories, and in union with the other programs within Energy Efficiency and Renewable Energy.

Building Technologies Program

The mission of the Office of the Building Technologies Program (OBT) is to manage a balanced program of technology planning, research, development, test, analysis, evaluation, communication, and practices that will make both residential and commercial buildings more efficient and affordable, and communities more livable. OBT responsibilities include building envelope and systems, appliances and equipment, and zero net energy buildings.

OBT works closely in partnership with the U.S. building, building equipment, and appliance industries to advance the technology, reduce development and operating costs, and maintain a competitive position in domestic and international markets for more energy efficient and cleaner buildings.

In the new organization structure, the Office of Building Technology, State and Community Programs has been reorganized into the Building Technologies Program and the Weatherization and Intergovernmental Program.

Distributed Energy Program

The mission of the Office of the Distributed Energy Program (ODE) is to: (1) lead to the next generation of clean, efficient, reliable, and affordable distributed energy resources (microturbines and industrial turbines, natural gas engines, hybrid technologies, and energy storage); (2) develop advanced grid technologies including high temperature superconductivity and modeling strategies that address transmission and distribution infrastructure, energy delivery, institutional, and regulatory needs; (3) optimize and integrate end-use generation and combined heat and power to achieve 60 percent efficiency at the appropriate levels of power quality and reliability; and (4) develop an energy resource framework that will result in flexible, efficient energy generation and delivery systems for a smart autonomous network.

ODE works closely in partnership with U.S. manufacturers, energy service providers, project developers, utilities, Federal and State policy makers, and end-users to advance technology, reduce development and operating costs, and maintain a competitive position with the most efficient and cleanest generation, transmission, and distribution systems in the world.

As a result of this reorganization, EERE's Office of Distributed Energy Resources has been renamed. The new Distributed Energy Program now also includes initiatives to improve operation of the nation's transmission network.

Federal Energy Management Program

The U.S. Department of Energy's Federal Energy Management Program (FEMP) works to reduce energy use at federal facilities. FEMP helps agencies save energy and taxpayer dollars by advancing energy efficiency and water conservation, promoting the use of distributed and renewable energy, and improving utility management decisions at federal sites. Energy management — using energy efficiently, ensuring reliable supplies, and reducing costs — is one of the most challenging tasks facing federal facility managers. Now, more than ever, the federal government, as the nation's largest single energy consumer, has a tremendous opportunity and a clear responsibility to save energy and lead by example.

The mission of FEMP is to provide Federal leadership to increase the energy security and decrease the environmental impact and cost of government by advancing energy efficiency and water conservation, promoting the use of distributed and renewable energy, and improving utility management decisions at Federal sites.

FreedomCAR & Vehicle Technologies Program

The mission of the Office of the FreedomCAR and Vehicle Technologies Program (OFCVT) is to reduce critical fuel consumption and/or allow substitution of non-petroleum based fuels in the transportation end-use sector. OFCVT responsibilities include hybrid systems R&D, advanced combustion engines R&D, electric vehicles R&D, materials R&D, heavy vehicles systems R&D, fuels utilization R&D, and R&D-related or private sector-related elements of technology utilization. Hybrid systems R&D includes propulsion subsystems, ancillary subsystems, high power energy storage, advanced power electronics, and electric machines; advanced combustion R&D includes combustion, emissions control, advanced engine R&D (e.g., CIDI, HCCI, VCR), and emissions health impacts.

OFCVT works closely with other Departmental offices to monitor, coordinate, and integrate closely related efforts such as those

encompassed in the FreedomCAR Partnership. OFCVT works closely in partnership with the U.S. domestic transportation industry, and other government and private organizations, with the goal of eliminating the transportation sector's impact on requirements for imported oil while significantly reducing the generation of greenhouse gases and criteria pollutants. Key aspects of the Office of Transportation Technologies have been incorporated into the FreedomCAR & Vehicle Technologies Program.

Geothermal Technologies Program

The mission of the Office of the Geothermal Technologies Program (OGT) is to increase the viability of geothermal technologies. The outcome of these efforts will be to provide clean, competitive, reliable power options for use in all energy supply and end-use sectors of the economy. OGT works closely in partnership with the U.S. geothermal energy industry to advance technology, reduce development and operating costs, and maintain a competitive position in domestic and international markets for renewable energy.

In the previous EERE structure, the geothermal and wind programs were combined. In the new structure, the Geothermal Technologies Program has been made a stand-alone program to reflect its increasing contribution to the goals of the National Energy Policy.

Hydrogen , Fuel Cells, & Infrastructure Technologies Program

The mission of the Office of the Hydrogen, Fuel Cells, & Infrastructure Technologies Program (OHFCIT) is to integrate hydrogen technologies, including transportation and distributed energy fuel cells, into the energy infrastructure. OHFCIT works closely in partnership with U.S. industry, academia, and National Laboratories to advance the technology, market, and policy needs to create and maintain a robust industry for development of hydrogen, fuel cells, and infrastructure technologies.

In the new organizational structure, the Hydrogen Program has been expanded to include fuel cells and infrastructure research and development (R&D) efforts, in addition to the hydrogen system-specific R&D work already underway. These will be combined under a new program to be known as the Hydrogen, Fuel Cells, & Infrastructure Technologies Program.

Industrial Technologies Program

The mission of the Office of the Industrial Technologies Program (OIT) is to partner with key, energy-intensive industries to conduct a balanced program of technology investigation, validation, and dissemination that will lead to the increased use of energy efficiency and pollution prevention technologies, as well as renewable energy resources, in the U.S. industrial sector. These efforts assist in reducing the Nation's dependence on foreign energy resources, the energy intensity of our economy, and the environmental impact of our industrial processes, while achieving cost-effective product quality enhancements and improving our competitiveness in the global marketplace.

Under the new organizational structure, the Industrial Technologies Program will continue to generate the opportunities, information, and tools to increase energy efficiency.

Solar Energy Technology Program

The mission of the Office of the Solar Energy Technology Program (OSET) is to increase the viability of solar energy technologies, including photovoltaic, concentrated solar power, and low temperature solar collectors as clean, competitive, reliable power options for use in end-use sectors of the economy. OSET accelerates the development of solar technologies as energy sources for the nation and world and educates the public about the value of solar as a secure, reliable, and clean energy choice.

Weatherization & Intergovernmental Program

The mission of the Office of the Weatherization and Intergovernmental Program (OWI) is to promote and accelerate the adoption of energy efficiency and renewable energy technologies by a wide range of customers and stakeholders, including States, weatherization agencies, communities, institutions, companies, private citizens, and the international community, through technology transfer and financial assistance grants. OWI responsibilities include Weatherization Assistance, State Energy, Community Partnerships, Energy Star, Clean Cities, U.S. Initiative on Joint Implementation, Asia-Pacific Economic Cooperation, Clean Energy Technology Exports Program, Energy and Environmental Technology Information Centers, Tribal Energy Program and Competitive Solicitation Program, Hemispheric Energy Symposium, and China Initiatives. The Weatherization and Intergovernmental Program conducts its functions in partnership with the six EERE Regional Offices.

In the reorganization, a new Weatherization and Intergovernmental Program was formed, providing consumers and decision-makers with information on cost, performance, and financing energy efficiency and renewable energy projects. It is responsible for maintaining working relationships with our stakeholders, some of whom include state and local governments, weatherization agencies, auto companies, fleet managers, building code officials, Native American tribal governments, and international agencies.

Wind & Hydropower Technologies Program

The mission of the Office of the Wind and Hydropower Technologies Program (OWHT) is to increase the viability of wind and hydropower technologies, as well as all other fluid dynamics-related renewables such as ocean current. The outcome of these efforts will be to provide clean, competitive, reliable power options for use in all energy supply and end-use sectors of the economy.

OWHT works closely in partnership with the U.S. wind and hydropower energy industries to advance technology, reduce development and operating costs, and maintain a competitive position in domestic and international markets for renewable energy. In the new organizational structure, the Wind Energy Program and the Hydropower Program have been joined to form the Wind & Hydropower Technologies Program.

1.2.6.2 Office of Deputy Assistant Secretary for Business Administration.

The mission of the Office of the Deputy Assistant Secretary for Business Administration (DAS-BA) is to provide effective corporate management leadership based on clear communication, open information systems, prudent human resource management, and thorough analysis in the areas of planning, budget, and operations to facilitate the accomplishment of EERE's goals. The DAS-BA reports to the Assistant Secretary through the Principal Deputy Assistant Secretary. The DAS-BA serves as the exclusive source for all EERE business products, processes, and systems and provides a full suite of business services to EERE's Assistant Secretary, Board of Directors, Office of Communications and Outreach, Deputy Assistant Secretary for Technology Development, and Program Management Offices. The DAS-BA is supported by three offices — the Office of Program Execution

Support, the Office of Planning, Budget Formulation and Analysis, and the Office of Information and Business Management Systems. The DAS-BA also oversees the activities of the Golden Field Office.

1.2.6.2.1 Office of Program Execution Support

The mission of the Office of Program Execution Support (OPES) is to provide a full spectrum of program execution business support services for EERE's Program Managers and for other EERE organizations. These support services include all of the business activities associated with program implementation, i.e., everything following the enactment of budget appropriations. OPES provides a "one-stop-shop" directly supporting Program Managers for program execution functions, including: creating and processing funding action documents; providing data entry support for EERE systems; developing presentation materials; assisting the PM to analyze budget and performance data from contractor, EERE, and Departmental systems and reports; human resources; travel; and other management operations. The Office is organized around three functional areas-Program Implementation, Human Resource Management, and Operations and Logistic Support.

1.2.6.2.2 Office of Planning, Budget & Analysis

The mission of the Office of Planning, Budget and Analysis (OPBA) is to provide analysis, information, and decision support for EERE Program Managers and other EERE management for planning, budget formulation, and budget defense to facilitate meeting EERE's corporate mission and goals. This support includes all of the business activities associated with planning and budget formulation, i.e., everything prior to the enactment of budget appropriations. The Office is organized around two functional areas-Planning and Analysis, and Budgeting.

1.2.6.2.3 Office of Information & Business Management Systems

The mission of the Office of Information and Business Management Systems (OIBMS) is to support the Assistant Secretary of Energy Efficiency and Renewable Energy by facilitating the effective and efficient delivery of EERE information and business management systems services in Headquarters and the Field. The Office reports to the Deputy Assistant Secretary for

Business Administration. The Office develops and manages corporate-level information and business management systems to ensure consistent, efficient, and effective business policies and practices for EERE's Headquarters and Field organizations. These systems include all of the business activities associated with planning and budget formulation, program implementation, and analyses and evaluation. The Office provides services in five areas — Headquarters and Field business systems; information technology and associated cyber security; environment, safety, and health; the coordination of audit activities; and the coordination of national laboratory evaluations and facility needs. The Office also provides Information and Business Management Systems services to the Office of the Assistant Secretary, the EERE Board of Directors, the Office of Communications and Outreach, the DAS for Technology Development, the Golden Field Office, and the Regional Offices.

1.2.6.2.4 Office of Legislative Affairs

The goals of the Office of Legislative Affairs include 1) acting as a focal point for EERE congressional affairs, 2) reducing the burden created by congressional activities on Front Office and EERE staff, 3) assuring EERE speaks with one clear, consistent, and informed voice to Congress, 4) increasing Congressional awareness of EERE program goals and benefits, and 5) increasing EERE awareness of Congressional activity and how it affects EERE programs. To achieve these goals, the Office is involved in preparing congressional hearings, responding to Congressional inquiries, identifying and tracking earmarks, and interfacing with Appropriations Committees staff.

1.2.7 Field Implementation Offices

1.2.7.1 Golden Field Office

The Golden Field Office is a full-service business organization and EERE's primary field implementation center. As such, GFO is responsible for administration of the management and operating contract for the National Renewable Energy Laboratory (NREL), field management of projects assigned by EERE programs, and providing administrative services to the EERE Regional Offices.

The Golden Field Office supports and implements all policies and mission objectives prescribed by the Assistant Secretary for Energy Efficiency and Renewable Energy. In support of its mission to

carry out research, development, commercialization activities, and application of energy efficiency and renewable energy technologies, GO is responsible for the management and administration of the DOE prime contract for the operation of the National Renewable Energy Laboratory (NREL), the Nation's premier Federal laboratory for renewable energy research. GO serves as the focal point for field project management of EERE technology development programs through partnerships with DOE laboratories and the private sector. GO carries out initiatives to meet requirements of the Energy Policy Act of 1992 as well as other EERE technology development initiatives. GO also provides administrative, business system, and legal support for the DOE Regional Offices. The GO technical, administrative, financial management, and legal responsibility for project execution, facility operation, and all site activities are carried out in accordance with DOE policy and guidance.

1.2.7.2 Regional Offices

The mission of each of the Department's six EERE Regional Offices (ROs) is to implement and support the policies and programs of the Assistant Secretary for Energy Efficiency and Renewable Energy (EERE) to increase the use of energy efficiency and renewable energy technologies in their assigned geographic areas; to provide information about the needs of these geographic areas for energy efficiency technologies, and to support other Departmental elements as directed by the Assistant Secretary for Energy Efficiency and Renewable Energy. More specifically, the ROs perform technology and information dissemination activities and partner with customers and stakeholders in the Field. The ROs are also responsible for administering the statutory energy grant programs of the Department.

EERE's six Regional Offices are the Federal government's principal mechanism for delivering energy efficiency and renewable energy programs at the regional, state and local levels. The six Regional Offices are located in Boston, MA; Philadelphia, PA; Atlanta, GA; Chicago, IL; Denver, CO; and Seattle, WA. For most energy users, the ROs are the gateway into EERE's portfolio of technical and financial resources, designed to increase the use of efficient energy and clean power technologies in buildings, industry, transportation, power generation, and Federal facilities.

Local experts know the needs of their areas best. For example, the State Energy Program is a statutory formula-grant program in which states submit annual plans for funding. There are mandated measures that each plan must address, but once the minimum requirements are met, a state may then request funds for almost any energy-efficiency program which best meets its citizens' needs. The state and local partnerships that take place through the Regional Offices are the primary vehicle through which the Department of Energy meets the needs of individual citizens, cities, counties, and states across the nation.



Besides serving from six to twelve states each, the ROs serve Washington, DC; Puerto Rico; Northern Marianas, and three U.S. territories (from now on treated as states). The ROs have a combined total of 124 Federal employees, almost a quarter of EERE's workforce, and administer more than \$200 million in funding each year. The ROs' role in managing grants and projects is critical to EERE's ability to accelerate the market penetration and the resulting economic, environmental, and energy security benefits of energy efficiency and renewable energy technologies. <http://www.eere.energy.gov/rso.html>

Reference:

- U.S. Department of Energy, Energy Efficiency and Renewable Energy, Regional Offices, DOE/EE-0248, Washington, D.C., 2001.
- <http://www.eere.energy.gov/rso.html>

1.2.8 EERE's R&D Facilities

Throughout the DOE complex, there are many large-scale R&D facilities that are “government-owned/contractor-operated.” Each DOE laboratory is under the stewardship of a specifically recognized Program Office responsible for the facilities and equipment at these centers of excellence. DOE delegated the government-owned stewardship responsibilities for NREL to EERE. In other words, the National Renewable Energy Laboratory is EERE's only wholly-owned research and development institution. As such, The Assistant Secretary for Energy Efficiency and Renewable Energy (EE-1), as Program Senior Official, is responsible for NREL's long-term viability including development and maintenance of NREL's physical infrastructure, scientific equipment, and scientific core competencies. NREL is operated for EERE under a management and operating contract by the Midwest Research Institute (MRI) as prime contractor. MRI is assisted in this task by subcontractors Battelle Memorial Institute and Bechtel National, Inc. to operate NREL. DOE has assigned stewardship responsibilities for other national laboratories (Oak Ridge, Sandia, and Pacific Northwest) that conduct EERE energy efficiency R&D to other DOE Program Offices.

NREL's facilities are located at three principal sites in the Denver Metropolitan Region.

- **Denver West.** NREL's headquarters offices in Golden, CO, consist of four rented buildings primarily used for administrative purposes and some "dry" lab work. The Golden Field Office and the Denver Regional Office also share space with NREL in these offices.
- **South Table Mountain.** NREL has a 300-acre campus located at the foot of South Table Mountain in Golden, CO, which consists of multiple research labs:
 - Solar Energy Research Facility (photovoltaics, superconductivity, and materials science, housing the National Center for Photovoltaics).
 - Field Test Laboratory Building (alternative fuels, biomass-derived chemicals, and genetic engineering).
 - Thermal Test Facility (buildings research and energy efficiency, including the Battery Thermal Test Facility).
 - Photovoltaic Outdoor Test Facility.
 - Alternative Fuels User Facility and Process Development Unit.
 - Solar Radiation Research Laboratory.
 - Thermochemical User Facility.
- **National Wind Technology Center.** Sits on more than 280 acres adjacent to DOE's Rocky Flats cleanup area (north of Golden). The National Wind Technology Center features:
 - Sixteen test stands for wind turbines.
 - Industrial User Facility.
 - Hybrid Power Test Facility.
 - Advanced Turbine Research Facility.
 - Dynamometer and Spin Test Facility.

EERE also conducts R&D activities at other DOE national laboratories including: Oak Ridge National Laboratory, Lawrence Berkeley National Laboratory, Pacific Northwest National Laboratory, Sandia National Laboratory, Argonne National Laboratory,

Brookhaven National Laboratory, Idaho National Engineering and Environmental Laboratory, Los Alamos National Laboratory, and the National Energy Technology Laboratory.

1.2.9 National Renewable Energy Laboratory

Background

Mission — NREL leads the Nation toward a sustainable energy future by developing renewable energy technologies, improving energy efficiency, advancing related science and engineering, and facilitating commercialization.

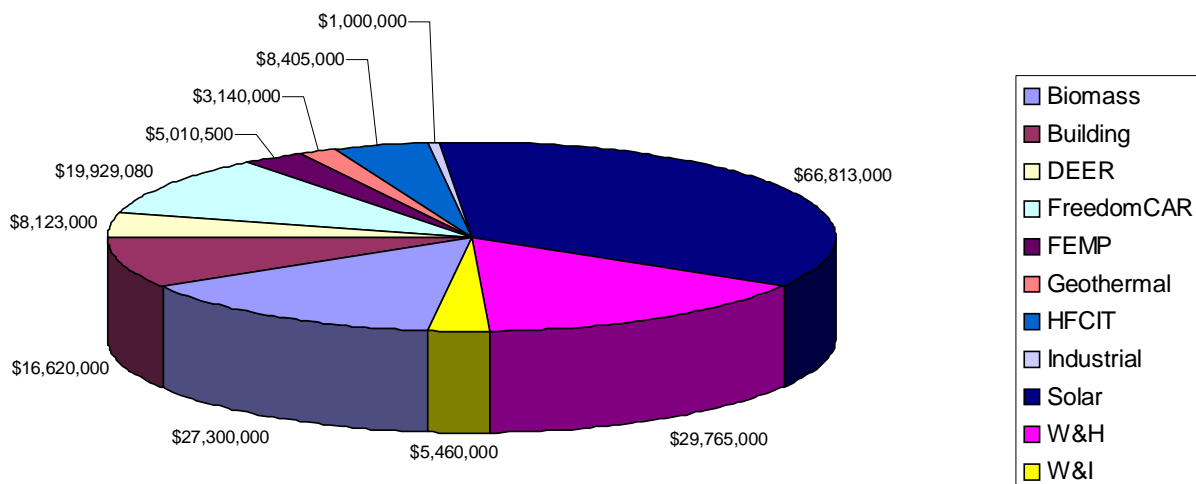
The National Renewable Energy Laboratory (NREL) is the world leader in developing renewable energy technologies and a primary laboratory for developing energy-efficient technologies.

Originally called the Solar Energy Research Institute, NREL was established by the Solar Energy Research, Development and Demonstration Act of 1974 as a national center for Federally sponsored solar energy R&D. President George Bush designated the Solar Energy Research Institute a national laboratory on September 16, 1991, and changed the name to the National Renewable Energy Laboratory. NREL is a Federally Funded Research and Development Center. As such, it is a strategic advisor to and partner with DOE, assisting the Department with a full range of activities from research and development through technology demonstration to facilitating deployment of these technologies into global markets.

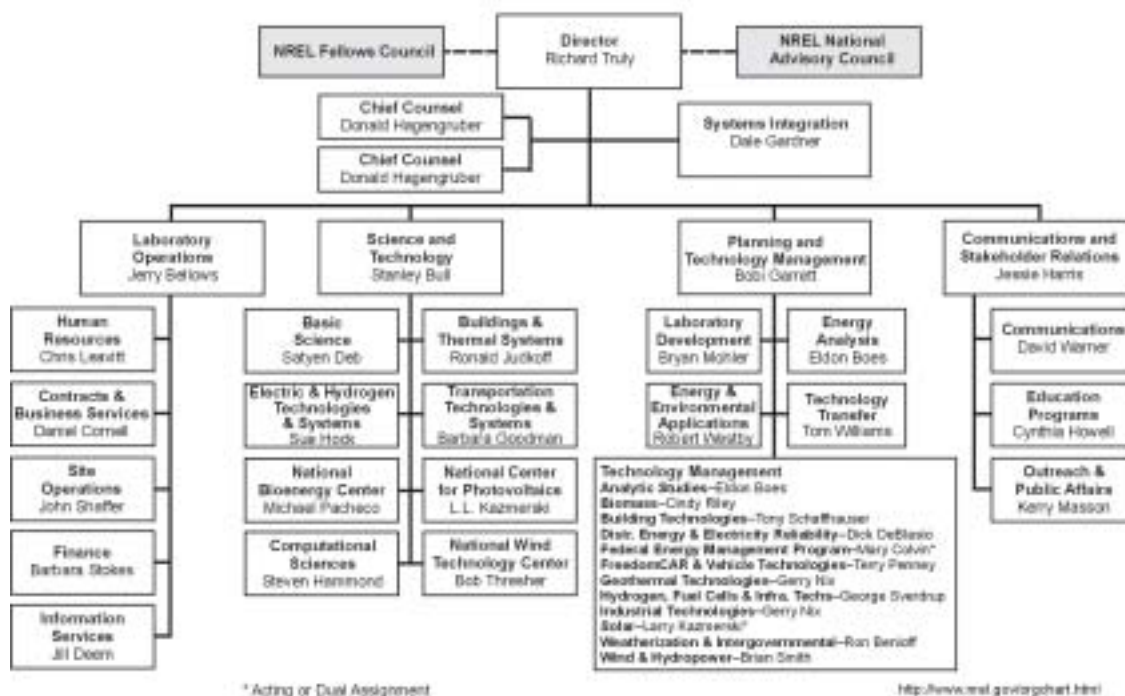
NREL is responsible for integrating the expertise and viewpoints of industry, academia, and DOE, and collaborates with many different organizations in accomplishing its mission. A contractor-operated laboratory owned by DOE, NREL is managed by Midwest Research Institute of Kansas City, MO (prime); Battelle Memorial Laboratory of Columbus, OH; and Bechtel Corporation of San Francisco, CA.

EERE has the primary responsibility for NREL's activities and stewardship responsibilities for NREL's long-term development. Locally, the Laboratory's contract is managed by DOE's Golden Field Office.

NREL FY 2003 Major Funding Sources



NREL FY 2003 Major Funding Sources



<http://www.nrel.gov/orgchart.html>

Areas of Expertise

NREL's highly skilled technical staff of about 850 scientists, engineers, analysts, and support personnel is internationally known and respected. NREL represents the world's largest collection of renewable energy and energy efficiency experts.

- **Fundamental science related to renewable energy and energy efficiency technologies.** NREL expertise includes condensed-matter physics, quantum theory, solid-state spectroscopy, photoelectrochemistry, computer modeling of complex systems, photosynthesis, catalysis and photocatalysis, crystal growth, electrochromics, quantum dot and nanostructured materials, bioconversion, genetic engineering, and high-temperature superconductivity.
- **Development and characterization of renewable energy, energy efficiency, and industrial conversion processes and technologies.** NREL expertise covers fundamental and applied science in the areas of photovoltaics, wind energy, biofuels, buildings, biopower, concentrating solar power, hydrogen, advanced automotive technology, superconductivity, industrial technologies, resource assessment, distributed power, and more.
- **Systems and process engineering and integration for renewable energy and energy efficiency technologies.** Using engineering disciplines including structural dynamics, electrical and electronic engineering, chemical processing, heat and mass transfer, aerodynamics, and more, NREL integrates individual technologies into complete conversion or energy-saving systems.
- **Integration of efficiency and renewable technologies with conventional fuel supply sources.** NREL is developing ways to diversify the Nation's energy supply options, using its expertise to integrate renewable and energy-efficient technologies with conventional energy technologies. Examples include using alternative fuels to augment conventional transportation fuels; using photovoltaics, wind energy, and hydrogen in distributed electricity systems to offset demand on conventional electricity-generating technologies; combining engine technologies into hybrid vehicles that use multiple sources of power; and integrating passive solar, electrochromics, photovolta-

ics, fuel cells, and heat pumps with conventional systems to heat and cool buildings.

- **Formation of partnerships for market and technology development for renewables and energy-efficient technologies.** NREL creates and coordinates innovative partnerships with clients ranging from small businesses and Fortune 500 companies to entire industries. NREL assists in developing policies and identifying and lowering market barriers to encourage development of self-sustaining businesses and markets.
- **Analysis.** NREL conducts analyses of energy technologies, applications, markets, and policies to support program planning, policy formulation, and technology deployment efforts. The laboratory applies its deep understanding of renewable technologies and markets to analyze issues, such as the role of renewables in addressing climate change and air quality, the potential to deploy renewable technologies in developing economies, and green energy markets. In addition, the laboratory has strong capabilities in life-cycle analysis and in modeling advanced energy efficiency and renewable technologies in energy economic models.

Centers of Excellence and User Facilities

NREL's capabilities include a number of laboratories, user facilities, and centers of excellence:

- **National Wind Technology Center.** A national center for designing and testing improved wind turbine technology, with user facilities for industry.
- **National Center for Photovoltaics.** A national center, managed jointly by NREL and Sandia National Laboratories, supporting DOE and the photovoltaic industry by conducting R&D, testing components, and designing modules and systems.
- **Solar Radiation Research Laboratory.** A facility to test, calibrate, and compare radiometers and other solar radiation measuring equipment using world radiation reference standards.
- **High-Flux Solar Furnace.** A national user facility providing highly concentrated sunlight for material and surface

processing; of interest to automotive, aerospace, defense, electronic, and other industries.

- **Alternative Fuels User Facility and Process Development Unit.** A 1-ton-per-day pilot plant for converting biomass to ethanol, available to industry to pilot processes intended for larger, commercial-scale facilities.
- **Thermochemical User Facility.** A process development facility that converts biomass feedstocks and other renewable fuels into a variety of products, such as electricity, high-value chemicals, and transportation fuels.
- **Battery Thermal Test Facility.** A user facility available to industry to design and test advanced batteries for electric and hybrid-electric vehicles.

1.2.10 EERE's Commitments and Requirements

EERE has many near- and long-term commitments derived primarily from Presidential Initiatives, Secretary of Energy Initiatives, and Executive Orders. These commitments take the form of programs, activities, projects, reports, or individual tasks. EERE's principal commitments and requirements from the various sources, as well as a list of unfunded requirements, follow. Activities and funding levels identified for these initiatives cross-cut EERE programs, and often DOE programs, many of which pre-date these initiatives. Many of the initiatives are interagency efforts.

Presidential Initiatives

- **Bioenergy/Bioproducts.** The goal of this initiative, described in Executive Order 13134, Developing and Promoting Biobased Products and Bioenergy Today (1999), is tripling U.S. use of biobased products and bioenergy by 2010. The order established three supporting groups: (1) An Interagency Council on Biobased Products and Bioenergy USDA (co-chair), DOE (co-chair), DOC, DOI, EPA, OMB, NSF to develop and present a biomass research program annually as part of the Federal budget, and to review major agency programs and activities to ensure that they effectively advance the initiative; (2) A joint USDA-DOE National Biobased Products and Bioenergy Coordination Office to ensure effective day-to-day coordi-

nation of actions implementing the initiative; (3) An outside advisory group with representatives from biobased industries, farm and forestry program offices, universities, and environmental groups. EERE supports the initiative with integrated R&D in transportation biofuels (FreedomCAR and Vehicle Technologies Program Office — FCVT), biomass power (Biomass Program Office), and forest products and agriculture industry technologies (Industrial Technologies Program Office). This will result in technologies for producing different combinations of fuels, power, chemicals, and other products from different feedstocks in different areas of the country

- **Climate Change Technology.** The Climate Change Technology Initiative (CCTI), begun in 1998, is comprised of domestic climate-related activities and policies, including those that promote energy efficiency, the development of low-carbon energy sources, sequestration of carbon, and climate science. At DOE, the initiative primarily covers R&D (EERE, FE, and SC). It also includes tax credits designed to encourage purchases of energy-efficient and renewable energy products, voluntary information programs to encourage businesses and others to conserve energy, and research into ways to sequester carbon in agriculture, in some cases as renewable fuels. R&D relating to energy efficiency and renewable energy sources is largely an evolutionary step from earlier programs initiated in the late 1970s and early 1980s to reduce dependency on oil imports. Most of the other initiatives addressed here are either included in the CCTI programs, or overlap with them. DOE is required to submit an annual Report to Congress with the budget request outlining those budget elements included in the CCTI. DOE also provides input to OMB on its annual Report to Congress. EERE has headed up both efforts for DOE for the last several years.
- **Clean Energy for the 21st Century.** The multi-agency Clean Energy for the 21st Century Initiative (a.k.a., International Clean Energy/International Energy Efficiency), begun in January 2000, helps lay a technical and policy foundation in developing and transition countries (e.g., ex-Soviet) to build a clean energy future while building competitive markets open to U.S. firms. DOE, the U.S. Agency for International Development, the Export-Import Bank, the U.S. Trade Development Agency, and the De-

partment of Commerce are the principal participants. EERE participates in a variety of areas, for example, appliance standards and Energy Star (Building Technologies Program Office), industrial best practices and assistance (Industrial Technologies Program Office), and integrated renewable energy (Distributed Energy and Electric Reliability Program Office). FY 2001 programs continue and expand support for international solar energy programs, such as the U.S. Initiative on Joint Implementation, renewable energy outreach information, and technical assistance.

- **Environmental Justice.** The goal of this initiative is to ensure fair treatment for people of all races, cultures, and incomes, regarding the development of environmental laws, regulations, and policies. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs Federal agencies to develop strategies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. EPA's Office of Environmental Justice oversees the initiative. In support, EERE focuses on helping communities comprised of people of color or low income attain their economic development and environmental objectives through the incorporation of energy-efficient and renewable energy technologies. A number of EERE competitive solicitations include environmental justice as one of the "Program Policy Factors." Participation in related interagency task forces provides EERE an excellent forum for identifying potential partners at the community level. Such task forces include the Brownfields Interagency Task Force, American Heritage Rivers Initiative, Brightfields Initiative, and Brownfields Showcase Communities.
- **Livable Communities.** The Livable Communities Initiative, begun in 1999, aligns and dedicates new and existing Federal resources to strengthen the Federal government's role as a partner with the growing number of State and local efforts to build "livable communities" for the 21st century. EERE's State Energy Program helps fund States designing and carrying out their own energy efficiency and renewable energy programs. The FCVT Program

Office programs for high efficiency and alternative-fueled vehicles contribute to increasing community transportation choices and reducing air pollution. DOE staff participate in an interagency New Initiatives Working Group that is developing a package of new livable communities initiatives.

- **Million Solar Roofs.** The Million Solar Roofs Initiative's goal is to facilitate one million solar roof installations (a mixture of solar heat/hot water and photovoltaics) by 2010. The initiative was begun in 1997. DOE already has received commitments for close to one million solar roofs. To further spur solar energy technologies, the President has proposed a 15 percent tax credit (up to \$2,000) for the purchase of rooftop solar systems. Million Solar Roofs is implemented by EERE's Solar Energy Technology Program Office, in cooperation with EERE's Building Technologies Program Office and the Federal Energy Management Program. Under Executive Order 13123 (1999), each Federal agency must strive to expand the use of renewable energy within its facilities and in its activities by implementing renewable energy projects and by purchasing electricity from renewable energy sources, including a goal of installing 20,000 solar systems on Federal buildings' rooftops by 2010.
- **Partnership for Advanced Technology in Housing (PATH).** The goal of the PATH Initiative, begun in 1998, is to speed the creation and widespread use of advanced technologies that measurably improve the quality, durability, energy efficiency, environmental performance, and affordability of our Nation's housing. The initiative seeks to make new homes 50 percent more energy efficient, and to make at least 15 million existing homes 30 percent more energy efficient, within a decade. Projects are underway in pilot communities in Denver, Los Angeles, Pittsburgh, and Tucson. HUD (the program manager) and DOE provide leadership for overall policy direction, in cooperation with the PATH Interagency Council composed of senior representatives from DOE, HUD, EPA, FEMA, DOC, and USDA. A working group with representatives from all the Federal agencies participating in PATH helps with day-to-day coordination of Federal activities.

PATH uses a five-part approach: industry-driven research partnerships on new technologies and practices, working with industry on pilot programs building thousands of marketable houses, streamlining of Federal, State and local codes and regulations, judicious use of existing authority on standards, and an information campaign to influence consumer demand. With the interagency working group, the Office of Building Technology is developing a technology roadmap for residential building research. It coordinates State and local participation in demonstrating new heating and air conditioning duct sealing technology in Weatherization Assistance Program homes. With industry, the program develops, promotes, and integrates energy technologies and practices to make buildings more energy efficient. EERE also helps coordinate Building America projects with PATH, provides technical assistance to other Federal agency partners, and increases outreach. The Million Solar Roofs Program is also coordinated with PATH.

- **Freedom Cooperative Automotive Research (FreedomCAR).** DOE and the U.S. Council for Automotive Research (composed of automakers Ford, General Motors, and DaimlerChrysler) announced in January 2002 a new cooperative research effort. Known as FreedomCAR (Freedom Cooperative Automotive Research), it represents DOE's commitment to developing public/private partnerships to fund high-risk, high-payoff research into advanced automotive technologies. Efficient fuel cell technology, which uses hydrogen to power automobiles without air pollution, is a very promising pathway to achieve the ultimate vision.

The goal of the partnership is to develop cars and trucks that are cheaper to operate, pollution free, competitively priced, and free from imported oil. America's transportation sector depends on petroleum for 95 percent of its fuel, and transportation accounts for 67 percent of our nation's petroleum use. The steady growth of imported oil needed to meet U.S. requirements—to current levels of approximately 10 million barrels of imported oil each day—may not be sustainable over the long term.

Fuel cells are 2-3 times more efficient than today's internal combustion engines in converting fuel to power. DOE has

determined that a promising approach to reducing our nation's consumption of petroleum is to develop hydrogen-powered fuel cell vehicles and the hydrogen supply infrastructure needed to support them.

- **21st Century Trucks.** This initiative, begun in April 2000, seeks to develop, by 2010, production prototype vehicles that achieve three times the fuel economy (measured in ton-miles per gallon) of heavy pickups, large urban delivery trucks, and full-sized buses. It seeks to double the fuel economy of 18-wheeler, long-haul trucks. The public-private partnership includes 18 companies from the trucking industry. DoD, DOE, DOT, and EPA cooperate on R&D toward advanced engines, fuel cells, advanced propulsion technologies, lightweight materials, vehicle design, advanced emissions control, and vehicle safety systems for long-haul trucks, heavy pickups, delivery vans, and full-size passenger buses. The initiative calls for production prototypes within 10 years. In support, EERE's FreedomCAR and Vehicle Technologies Program Office does R&D on advanced emissions technologies, advanced propulsion systems, advanced materials, and innovative vehicle designs. Indications are that the Secretary of Energy will be heading the initiative, and EERE's FCVT Program Office will be the primary participant. A Partnership Coordinating Committee, made up of senior representatives from the participating companies and government agencies, will develop a plan detailing the initiative's goals and timetables. In addition, external peers will review the partnership committee's work each year to ensure that technological advances are on track to meet the goals set for 2010.
- **Greening the Government Through Efficient Energy Management and Greening the Government Through Federal Fleet and Transportation Efficiency.** This initiative places emphasis on improving the energy efficiency and environmental quality of the Federal program office. Executive Order 13123, Greening the Government Through Efficient Energy Management, assigns the EERE Federal Energy Management Program (FEMP) responsibility for providing technical assistance, guidance, and sometimes setting targets for Federal agencies. FEMP assists Federal agencies to identify, finance, and implement

energy efficiency and renewable energy projects and to manage utility costs in Federal facilities. The agencies then act to increase energy efficiency and renewable energy use, and reduce water consumption in their buildings, facilities, and operations. FEMP has developed contractual mechanisms to attract substantial private-sector funds to improve the energy efficiency of Federal facilities.

Executive Order 13149, Greening the Government Through Federal Fleet and Transportation Efficiency, requires each Federal agency operating 20 or more motor vehicles within the United States to reduce its entire vehicle fleet's annual petroleum consumption by at least 20 percent by the end of FY 2005, compared with FY 1999 levels. Each agency must fulfill the acquisition requirements for alternative fueled vehicles established by the Energy Policy Act of 1992. The FCVT Program Office facilitates evaluation and use of advanced technology vehicles by Federal agencies and helps Federal agencies acquire alternative fuel vehicles. This office also strengthens the joint DOE/General Services Administration program to promote development of alternative fuel refueling infrastructure.

Secretary of Energy Initiatives

- **Power Outage Prevention (Short-term).** The goal of this initiative, established in 1999, is to ensure that the Nation's electric power system remains reliable as the industry transitions to competitive markets over the short term. Participants study significant electric power outages and recommend appropriate Federal actions to avoid the recurrence of similar system disturbances in the future. EERE participants include the Industrial Technologies Program Office, the Building Technologies Program Office, Distributed Energy Program Office, and the Federal Energy Management Program. For example, EERE programs develop standards for more efficient air conditioners, support focused research on energy storage technologies to reduce the high cost of power outages, improve power quality, and enhance technology choices in a competitive utility environment.
- **Energy Grid Reliability (Electricity Grid Component, Long-term).** The goal of this initiative, established in 1999, is to establish an integrated set of program activities

for both the electricity grid and the natural gas grid that will enable the long-term reliable delivery of energy services to consumers in competitive, restructured energy markets. The continued merging of energy delivery systems and telecommunications systems (the emerging InterGrid) has created the need for closer integration of programs. EERE is developing advanced technologies for reliable and cost-efficient power delivery, with an emphasis on the integration of distributed generation resources. This includes developing policies and technologies (e.g., system simulation, power storage, real-time sensors and controls, and new distributed power options) that will help increase system reliability by improving system flexibility, efficiency, and security. EERE participants include the Industrial Technologies Program Office, Building Technologies Program Office, and Distributed Energy Program Office.

- **EnergySmart Schools Partnership.** The EnergySmart Schools Partnership was initiated by the Secretary in 1998 as part of an interagency effort to improve the Nation's schools by reducing energy bills, improving the learning environment, and redirecting the savings to our children's education. Schools can reduce their energy bills by 25 percent and realize potential savings of \$1.5 billion annually. The EnergySmart Schools initiative uses existing EERE programs, including the State Energy Programs, Rebuild America, Clean Cities, Energy Star, and the President's Million Solar Roofs Initiative. This public-private partnership provides technical assistance, an information clearinghouse, technology demonstrations, guidance in financing mechanisms and design, and education in energy awareness to school districts around the country.
- **Geopowering the West.** This January 2000 initiative seeks a dramatic increase in the use of geothermal energy to meet the electric power or heat energy needs of 7 million homes and businesses in the western United States by 2010, and supply at least 10 percent of the West's electricity by 2020. EERE's Geothermal Technologies Program Office and Wind & Hydropower Technologies Program lead implementation of the initiative. The initiative includes education, awareness, and outreach activities aimed at a variety of stakeholders such as businesses,

government organizations, Native American groups, and the general public. EERE's program also facilitates near-term priority opportunities and targeted technical support activities.

- **Lighting and Appliance Standards.** The Secretary of Energy assigned this initiative the goal of having the Building Technologies Program Office prepare, and DOE issue, final rules for clothes washers, fluorescent lamp ballasts, water heaters and central air conditioner energy efficiency standards by late December 2000. EERE published a notice of proposed rulemaking for water heaters in the Federal Register on April 28, 2000; the comment period closed July 12, 2000. On May 23, 2000, the Secretary, with senior industry and energy efficiency advocates, announced a consensus agreement on standards for clothes washers. The final rule for ballasts was published in the Federal register on September 19, 2000. Final Notices of Proposed Rulemaking were published in October for residential central air conditioners (and heat pumps) and clothes washers.
- **Natural Gas.** This developing initiative coordinates and fosters research and market barrier actions to expand opportunities for clean and efficient natural gas technologies. Near-term goals focus on market efficiency, market opportunities, and reducing market barrier impediments to the use of such technologies. EERE's Hydrogen R&D Program supports demonstrations of residential and building-sized hydrogen/natural gas fuel cells for off-grid applications. EERE's Fuel Cell R&D program focuses on overcoming the critical technology barriers to developing and validating viable fuel cell systems for automotive applications. This technology is also directly applicable to light truck and heavy-duty vehicle applications (e.g., buses). In order to realize the market penetration of alternative fueled vehicles, an aggressive program has been structured to support the widespread use and distribution of natural gas as a transportation fuel.
- **Pollution Prevention/Energy Efficiency (P2E2).** The 1999 P2E2 Initiative goal is to enable DOE to meet the requirements of Executive Order 13123, Greening the Government Through Efficient Energy Management. This means preventing pollution, reducing greenhouse gas emissions,

reducing energy costs, and deploying energy-efficient technologies throughout DOE facilities and operations to satisfy the Administration's pollution-related requirements. EERE's FEMP, through its Departmental Energy and Utility Team, provides funding support to DOE sites for accomplishing energy management projects and expanding the use of private-sector financing for energy management, thus allowing the Department to meet the requirements of Executive Order 13123

- **Wind Powering America.** The goal of this initiative, initiated in 1999, is a dramatic increase in the use of wind energy in the United States from today's level of 2,500 megawatts. It includes tripling the number of States with more than 20 MW of wind capacity installed by 2010, providing 5 percent of Federal electricity use by 2010 with wind power, and providing at least 5 percent of the Nation's electricity by 2020 with wind power. The Geothermal Technologies and Wind & Hydropower Technologies programs provide resources assessments, technical assistance, and economic analysis to potential stakeholders and potential partners. It organizes community outreach programs and regional and State wind workshops. The office also leads Federal efforts in the purchase of wind-generated power. The Federal government has set a goal of purchasing 5 percent of its electricity from wind-generated power by 2010. Over 30 Federal agencies at 130 sites in the Denver metropolitan area will soon purchase 10 megawatts of electricity generated by wind, as well as solar, geothermal, and biomass energy. The Wind Power America initiative includes a regional field verification program for competitively selected projects that address unique siting, regulatory, electric power systems, and marketing issues in key regions of the United States.
- **Ultra-Clean Transportation Fuels.** The goal of the 1999 Ultra-Clean Transportation Fuels Initiative is, over the next seven years, to develop a portfolio of fuels that enable the high-efficiency and low-emission operation of light- and heavy-duty transportation vehicles. A planning effort between EERE's FCVT Program Office and DOE's Office of Fossil Energy produced a joint program plan for Ultra-Clean Transportation Fuels that included a technical roadmap specifying near- and long-term goals, scheduled

milestones, and funding requirements. The initiative supports proposals in three areas: technology for the production of ultra-clean fuels from a variety of resources; innovative emission control technologies, processes, or devices; and innovative fuel-making components, materials, processes, or technologies within the context of a system that includes fuel-engine after treatment.

Executive Orders

Executive Orders from the President specify programs, activities, goals, and objectives applying to all Federal government operations. The current Executive Orders requiring program action in EERE are listed below.

- **Greening the Government Through Efficient Energy Management, Executive Order 13123.** This initiative places emphasis on improving the energy efficiency and environmental quality of the Federal program office. It assigns EERE responsibility for providing technical assistance, guidance, and sometimes setting targets for Federal agencies. EERE's Federal Energy Management Program (FEMP) helps Federal agencies identify, finance, and implement energy efficiency and renewable energy projects and manage utility costs in Federal facilities. The agencies then act to increase energy efficiency and renewable energy use, and reduce water consumption in their buildings, facilities, and operations. FEMP has developed contractual mechanisms to attract substantial private-sector funds to improve the energy efficiency of Federal facilities.
- **Developing and Promoting Biobased Products and Bioenergy, Executive Order 13134.** Bioenergy/Bioproducts. The goal of this initiative is tripling U.S. use of biobased products and bioenergy by 2010. These technologies will produce different combinations of fuels, power, chemicals, and other products using different feedstocks in different areas of the country. The order established three supporting groups: (1) an Interagency Council on Biobased Products and Bioenergy — USDA (co-chair), DOE (co-chair), DOC, DOI, EPA, OMB, NSF — to develop and present a biomass research program annually as part of the Federal budget, and to review major agency programs and activities to ensure that they effectively advance the initiative; (2) a joint USDA-DOE

National Biobased Products and Bioenergy Coordination Office to ensure effective day-to-day coordination of actions implementing the initiative; (3) an outside advisory group with representatives from biobased industries, farm and forestry program offices, universities, and environmental groups. EERE supports the initiative with integrated R&D in transportation biofuels (FCVT Program Office), biomass power (Biomass Program Office), and forest products and agriculture industry technologies (Industrial Technologies Program Office).

- **Greening the Government Through Federal Fleet and Transportation Efficiency, Executive Order 13149.** This order requires each Federal agency operating twenty or more motor vehicles within the United States to reduce its entire vehicle fleet's annual petroleum consumption by at least 20 percent by the end of FY 2005, compared with FY 1999 levels. Each agency must fulfill the acquisition requirements for alternative-fueled vehicles established by the Energy Policy Act of 1992. The FCVT Program Office helps Federal agencies evaluate advanced technology vehicles and acquire alternative fuel vehicles. This office also strengthens the joint DOE/General Services Administration program to promote development of an alternative fuel refueling infrastructure.
- **Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition, Executive Order 13101.** The head of each executive agency must incorporate waste prevention and recycling in the agency's daily operations. They must work to increase and expand markets for recovered materials through greater Federal government preference and demand for such products. Each must comply with executive branch policies for the acquisition and use of environmentally preferable products and services and implement cost-effective procurement preference programs favoring the purchase of these products and services. Federal agencies require EERE products and information to comply with this Executive Order provided below, but it does not assign EERE a specific role for its implementation.
- **Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use, Executive Order 13211 (of May 18, 2001).** Agencies will prepare

and submit a Statement of Energy Effects to the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, for those matters identified as significant energy actions. They will publish these statements, or a summary of them, in each related Notice of Proposed Rulemaking and in any resulting Final Rule. "Significant energy action" means:

- any action by an agency (normally published in the Federal Register) that promulgates or is expected to lead to the promulgation of a final rule or regulation, notices of inquiry, advance notices of proposed rulemaking, and notices of proposed rulemaking;
 - any action deemed a significant regulatory action under Executive Order 12866 or any successor order;
 - any action likely adversely and significantly to affect the supply, distribution, or use of energy;
 - any action that the Administrator of the Office of Information and Regulatory Affairs designates as a significant energy action.
- **Actions to Expedite Energy-Related Projects, Executive Order 13212 (May 18, 2001).** Executive departments and agencies will act to expedite projects that will increase the production, transmission, or conservation of energy. They will expedite their review of permits or take other actions as necessary to accelerate the completion of such projects, while maintaining safety, public health, and environmental protections. The agencies will do so to the extent permitted by law and regulation. An Interagency Task Force will monitor and assist agency efforts. The Task Force also will help set up appropriate mechanisms to coordinate Federal, State, tribal, and local permitting in geographic areas where increased permitting activity is expected.

References:

- Executive Orders Disposition Tables, January 9, 1939 to present, National Archives and Records Administration, <http://www.nara.gov/fedreg/eo.html#top>

1.2.11 Statutory Underpinnings

Many statutes under Titles 15 and 42 (Commerce and Trade and The Public Health and Welfare, respectively) specify programs, activities, goals, and objectives applying to EERE. For example, the Energy Policy and Conservation Act of 1975 and the National Appliance Energy Conservation Act direct DOE to set energy efficiency standards for appliances. The statutes that underpin many of EERE's programs are summarized below.

- **Solar Energy Research, Development, and Demonstration Act of 1974, as Amended.** Directs an R&D program, including design and construction of facilities, to address the major technical problems inhibiting commercial use of solar energy. Establishes a solar energy resource determination and assessment program. Details the goals of the programs. Established the Solar Energy Research Institute (now the National Renewable Energy Laboratory).

This statute, Pub. L. 93-473, Oct. 26, 1974, 88 Stat. 1431 (Title 42, Sec. 5551 et seq.), includes amendments made by the Congressional Reports Elimination Act of 1980.

- **Federal Energy Administration Act of 1974, as Amended.** Established the Federal Energy Administration by transferring functions of the Secretary of the Interior, the Chairman of the Cost of Living Council, and the Executive Director of the Cost of Living Council related to production, conservation, and allocation of all forms of energy, including DOI's Office of Petroleum Allocation, Office of Energy Conservation, Office of Energy Data and Analysis, and the Office of Oil and Gas. Provides for an economic analysis of the impact of proposed regulatory actions.

This statute, Pub. L. 93-275, May 7, 1974, 88 Stat. 96 (Title 15, Sec. 761 et seq.) includes amendments made by the amendments to the Federal Energy Administration Act of 1974, Energy Conservation and Production Act, Federal Energy Administration Authorization Act (1977), Department of Energy Organization Act (1977), Congressional Reports Elimination Act of 1980, Federal Reports Elimination and Sunset Act of 1995, National Defense Authorization Act for Fiscal Year 1996, Department of Energy Standardization Act of 1997.

- **Nonnuclear Energy Research and Development Act of 1974, as Amended.** Consolidated various energy R&D programs within the Energy Research and Development Administration, required development of a comprehensive plan for energy “research, development, and demonstration” for energy conservation, waste-to-fuel, recycling, clean fossil fuel, efficient electricity, geothermal, synthetic fuels, solar, and ocean thermal technologies and was the enabling legislation for the Inventions and Innovations Program. Created “corporations” for joint Federal-private initiatives in each (e.g., the Synthetic Fuels Corporation).

This statute, Pub. L. 93-577, Dec. 31, 1974, 88 Stat. 1878 (Title 42, Sec. 5901 et seq.), includes amendments made by the Authorization of Appropriations for Fiscal Year 1976, ERDA, National Energy Extension Service Act, DOE Authorization Act of 1978, Civilian Applications Congressional Reports Elimination Act of 1980, amendments to Patent and Trademark Laws (1980), Congressional Reports Elimination Act of 1986, Energy Policy Act of 1992, Federal Reports Elimination and Sunset Act of 1995, National Defense Authorization Act for Fiscal Year 1996, General Accounting Office Act of 1996.

- **Energy Policy and Conservation Act (EPCA), as Amended.** Requires average fuel economy standards for passenger automobiles manufactured by any manufacturer in any model year after model year 1977, and assigns DOE responsibilities in managing the fuel economy program. Prescribes a program of test procedures for classes of consumer and industrial products specified in the law. Directs energy efficiency improvement targets for each type of covered product and procedures for prescribing the standards. Establishes an international energy program to facilitate the ability of the domestic renewable energy industry and related service industries to create new markets.

This statute, Pub. L. 94-163, Dec. 22, 1975, 89 Stat. 871 (Title 42, Sec. 6201 et seq.), includes amendments made by the Energy Policy and Conservation Act Extension Amendment of 1990, Energy Policy and Conservation Act Short-Term Extension Amendment of 1990, Energy Policy and Conservation Act Amendments Act of 1990, 1994,

and 1995, Naval Petroleum Reserves Production Act, Energy Conservation and Production Act (1976), Federal Energy Administration Authorization Act (1977), National Energy Conservation Policy Act (1978), Export Administration Act of 1979, Emergency Energy Conservation Act of 1979, Energy Security Act (1980), Congressional Reports Elimination Act of 1980, Omnibus Budget Reconciliation Act of 1981, Energy Emergency Preparedness Act of 1982, Renewable Energy Industry Development Act of 1983, Energy Policy and Conservation Amendments Act of 1985, Supplemental Appropriations Act, 1985, Consolidated Omnibus Budget Reconciliation Act of 1985, Omnibus Budget Reconciliation Act of 1986, National Appliance Energy Conservation Act of 1987, National Appliance Energy Conservation Amendments of 1988, Alternative Motor Fuels Act of 1988, Federal Energy Management Improvement Act of 1988, Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989, Energy Policy and Conservation Act Extension Amendment of 1990, Energy Policy and Conservation Act Short-Term Extension Amendment of 1990, Energy Policy and Conservation Act Amendments of 1990, State Energy Efficiency Programs Improvement Act of 1990, Energy Policy Act of 1992, codification of existing Federal transportation law (1994), codification and amendment of specified provisions of Federal transportation law (1994), Federal Reports Elimination and Sunset Act of 1995, General Accounting Office Act of 1996, National Defense Authorization Act for Fiscal Year 1996, Balanced Budget Act of 1997, Higher Education Amendments of 1998, Energy Conservation Reauthorization Act of 1998, Amendments to the Energy Policy and Conservation Act of 1975 in 1979, 1981, 1984, 1988, 1989, 1996, and 1998.

- **Energy Conservation and Production Act (ECPA), as Amended.** Provides for the development and implementation of voluntary performance standards for new residential and commercial buildings. Encourages State and local governments to adopt and enforce such standards through their existing building codes and other construction control mechanisms, or to apply them through a special approval process. Establishes a Weatherization Assistance Program to increase the energy efficiency of dwellings owned or occupied by low-income persons, such

as the elderly, the handicapped, and children, to reduce their total residential energy expenditures and improve their health and safety.

This statute, Pub. L. 94-385, Aug. 14, 1976, 90 Stat. 1125 (Title 42, Sec. 6801 et seq.), includes amendments made by the Federal Energy Administration Authorization Act (1977), Developmental Disabilities Assistance and Bill of Rights Act, Public Utility Regulatory Policies Act, Congressional Reports Elimination Act of 1980, Congressional Reports Elimination Act of 1982, State Energy Efficiency Programs Improvement Act of 1990, Energy Policy Act of 1992, National and Community Service Trust Act of 1993, General Accounting Office Act of 1996, Workforce Investment Partnership Act of 1998, Omnibus Consolidated and Emergency Supplemental Appropriations Act (1999), Energy Conservation Reauthorization Act of 1998.

- **Electric and Hybrid Vehicle Research Development and Demonstration Act of 1976, as Amended.** Establishes a program of electric vehicle research and development. Authorizes the introduction of electric vehicles into fleets used by Federal agencies.

This statute, Pub. L. 94-413, Sept. 17, 1976, 90 Stat. 1260 (Title 15, Sec. 2501 et seq.), includes amendments made by the DOE Authorization Act of 1978-Civilian Applications, Congressional Reports Elimination Act of 1980, Congressional Reports Elimination Act of 1982, Federal Reports Elimination and Sunset Act of 1995.

- **Department of Energy Organization Act (1977), as Amended.** Establishes a Department of Energy in the executive branch. Transfers all functions of the Federal Energy Administration, the Energy Research and Development Administration, and the Federal Power Commission to the Department. Transfers specified functions from other departments and agencies to the Department.

This statute, Pub. L. 95-91, Aug. 4, 1977, 91 Stat. 565 (Title 42, Sec. 7101 et seq.) includes amendments made by the Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act Fiscal Year 1979, National Energy Conservation Policy Act (1978), Powerplant and Industrial Fuel Use Act of 1978,

Natural Gas Policy Act (1978), General Accounting Office Act of 1980, Congressional Reports Elimination Act of 1982, Omnibus Budget Reconciliation Act of 1986, Inspector General Act Amendments of 1988, amendments to the Department of Energy Organization Act (1988), Federal Energy Regulatory Commission Member Term Act of 1990, National Defense Authorization Act for Fiscal Year 1991, Intelligence Authorization Act, Fiscal Year 1991, Energy Policy Act of 1992, National Defense Authorization Act for Fiscal Year 1994, codification of existing Federal transportation law (1994), National Defense Authorization Act for Fiscal Year 1995, Alaska Power Administration Asset Sale and Termination Act and Outer Continental Shelf Deep Water Royalty Relief Act, Federal Reports Elimination and Sunset Act of 1995, National Defense Authorization Act for Fiscal Year 1996, Energy and Water Development Appropriations Act, 1997, Department of Energy Standardization Act of 1997, Energy and Water Development Appropriations Act, 1999.

- **National Energy Conservation Policy Act (NECPA) and Federal Photovoltaic Utilization Act, as Amended.** The National Energy Conservation Policy Act establishes guidelines, procedures, and criteria for residential energy conservation plans, weatherization grants to low-income people, and energy audits of, and conservation grants to, school and hospital facilities. Establishes a program to demonstrate solar heating and cooling technology in Federal buildings, including criteria for evaluating Federal agency proposals. Directs energy performance targets for Federal buildings. The Federal Photovoltaic Utilization Act establishes a program for procuring photovoltaic solar electric systems in new and existing Federal facilities. Establishes a photovoltaic systems evaluation and purchase program.

This statute, Pub. L. 95-619, Nov. 9, 1978, 92 Stat. 3206 (Title 42, Sec. 8201 et seq.), includes amendments made by the National Energy Conservation Policy Act, Energy Security Act (1980), Consolidated Omnibus Budget Reconciliation Act of 1985, Conservation Service Reform Act of 1986, Omnibus Budget Reconciliation Act of 1986, Federal Energy Management Improvement Act of 1988, Renewable Energy and Energy Efficiency Technology Competi-

tiveness Act of 1989, amendments to title 38, United States Code (1991), Energy Policy Act of 1992, codification of existing Federal transportation law (1994), Federal Reports Elimination and Sunset Act of 1995, Federal Reports Elimination and Sunset Act of 1995, General Accounting Office Act of 1996, Energy Conservation Reauthorization Act of 1998, Omnibus Consolidated and Emergency Supplemental Appropriations Act, (1999).

- **Powerplant and Industrial Fuel Use Act of 1978, as Amended.** Requires Federal agencies providing Federal financial assistance through loans, grants, or contracts to achieve conservation of petroleum and natural gas.

This statute, Pub. L. 95-620, Nov. 9, 1978, 92 Stat. 3289 (Title 42, Sec. 8301 et seq.), includes amendments made by the Powerplant and Industrial Fuel Use Act of 1978, Omnibus Budget Reconciliation Act of 1981, Congressional Reports Elimination Act of 1982, amendments to the Powerplant and Industrial Fuel Use Act of 1978 (1988), Energy Policy Act of 1992, Federal Reports Elimination and Sunset Act of 1995.

- **Energy Tax Act of 1978, as Amended.** Allows an income tax credit to an individual for energy conservation expenditures and for qualified renewable energy source expenditures. Provides for a depletion deduction, the option to deduct as expenses intangible drilling and development costs, and the minimum tax provisions for excess intangible drilling costs of individuals for geothermal resources and natural gas produced from geopressured brine located in the United States. Extends the recapture provisions for oil and gas property to include geothermal wells. Extends the risk limitation of losses that may be deducted for exploiting oil and gas to include geothermal resources.

This statute, Pub. L. 95-618, Nov. 9, 1978, 92 Stat. 3174 includes amendments made by the Crude Oil Windfall Profit Tax Act of 1980, Tax Equity and Fiscal Responsibility Act of 1982.

- **Methane Transportation Research Development and Demonstration Act of 1980, as Amended.** Establishes an RD&D program on methane-fueled vehicles and optimum overall specifications for such vehicles. Establishes demonstrations of the economic and technological

practicalities of methane-fueled vehicles for fleet use, and of methane-fueled farm equipment. Promotes the substitution of methane-fueled vehicles for gasoline- and diesel-powered vehicles currently used on farms and in fleet operations.

This statute, Pub. L. 96-512, Dec. 12, 1980, 94 Stat. 2827 (Title 15, Sec. 3801 et seq.), includes amendments made by the Congressional Reports Elimination Act of 1982, Federal Reports Elimination and Sunset Act of 1995.

- **National Appliance Energy Conservation Act of 1987.** Amends the Energy Policy and Conservation Act to revise the list of appliances covered under the Act. Prescribes a program of test procedures for classes of consumer and industrial products specified in the law. Directs energy efficiency improvement targets for each type of covered product and procedures for prescribing the standards. Established the deadline for initial DOE rulemaking and authorizes continued rulemaking.

This statute is Pub. L. 100-12, Mar. 17, 1987, 101 Stat. 103 (Title 42, Sec. 6291 et seq.).

- **Alternative Motor Fuels Act of 1988, as Amended.** Amends the Energy Policy and Conservation Act to direct the Secretary of Energy to ensure that the maximum practicable number of Federal passenger automobiles and light-duty trucks be either methanol-powered or dual-energy vehicles. Sets forth other requirements regarding the use of alternative motor fuels.

This statute, Pub. L. 100-494, Oct. 14, 1988, 102 Stat. 2441, includes amendments made by the Energy Policy Act of 1992, and an act codifying existing Federal transportation law (1994).

- **Renewable Energy and Energy Efficiency Technology Competitiveness Act of 1989, as Amended.** Authorizes and directs a program of research, development, demonstration, and commercial application with the private program office for renewable energy and alternative energy resources. Establishes long-term Federal research goals for wind, photovoltaic, solar thermal, and alcohol from biomass technologies. Directs improving the ability of the private program office to commercialize renewable

energy and energy efficiency technologies through government support of a program of demonstration and commercial application projects.

This statute, Pub. L. 101-218, Dec. 11, 1989, 103 Stat. 1859 (Title 42, Sec 12001 et seq.), includes amendments made by the Energy Policy Act of 1992.

- **Clean Air Act Amendments of 1990, as Amended.** Amends the Clean Air Act to establish air quality standards for nonattainment areas. Sets requirements with respect to mobile sources and sources emitting hazardous air pollutants, sulfur dioxide, and nitrogen oxides. Establishes permit programs. Revises enforcement and penalty provisions. Establishes programs for acid deposition control and stratospheric ozone protection.

This statute, Pub. L. 101-549, Nov. 15, 1990, 104 Stat. 2399 includes amendments made by the General Accounting Office Act of 1996.

- **Global Change Research Act of 1990.** Establishes a comprehensive and integrated U.S. research program that will assist the Nation and the world in understanding, assessing, predicting, and responding to human-induced and natural processes of global change. Promotes international, intergovernmental cooperation on global change research. Promotes international efforts to provide technical and other assistance to developing nations that will facilitate improvements in their domestic standard of living while minimizing damage to the global or regional environment.

This statute is Pub. L. 101-606, Nov. 16, 1990, 104 Stat. 3096 (Title 15, Sec. 2921 et seq.).

- **Department of Energy Metal Casting Competitiveness Research Act of 1990, as Amended.** Directs establishment of an R&D program on technology competitiveness and energy efficiency in the U.S. metal casting industry and creates an overseeing Industrial Advisory Board. Requires non-Federal matching contributions.

This statute, Pub. L. 101-425, Oct. 15, 1990, 104 Stat. 915 (Title 15, Sec. 5301 et seq.), includes amendments made by the Energy Policy Act of 1992.

- **Solar Wind, Waste, and Geothermal Power Production Incentives Act of 1990.** Amends the Public Utility and Regulatory Policies Act of 1978 (PURPA) and the Federal Power Act to remove the size limitations placed upon solar, wind, and geothermal facilities eligible for PURPA regulatory benefits. Sets forth general qualification, certification application, and construction deadline requirements for such facilities.

This statute is Pub. L. 101-575, Nov. 15, 1990, 104 Stat. 2834.

- **Energy Policy Act of 1992, as Amended.** Amends the National Energy Conservation Policy Act. Establishes programs, requirements, and criteria for energy efficiency in buildings, for appliance and equipment energy efficiency standards, for industrial energy use, for State and local assistance, and for Federal agency energy management. Provides guidelines for DOE to acquire alternative-fueled vehicles for the Federal fleet, to report on Federal experience with alternative-fueled heavy-duty vehicles, and to assist Federal agencies in procuring and placing alternative-fueled vehicles. Sets minimum Federal fleet requirements for alternative-fueled vehicles. Establishes programs, requirements, and criteria for alternative fuels and fuel conservation for vehicles in non-Federal Programs and sets a timetable for the acquisition of alternative-fueled vehicles by specified persons engaged in fuels transactions. Directs an electric motor vehicle demonstration program. Details the program's proposal parameters. Directs a five-year program to further the commercialization of renewable energy and energy efficiency technologies by soliciting proposals for demonstration and commercial application projects.

This statute, Pub. L. 102-486, Oct. 24, 1992, 106 Stat. 2776 includes amendments made by the codification of existing Federal transportation law (1994), Federal Reports Elimination and Sunset Act of 1995, ICC Termination Act of 1995, Department of the Interior and Related Agencies Appropriations Act, 1996, Safe Drinking Water Act Amendments of 1996, Small Business Job Protection Act of 1996, amendments to the Uranium Mill Tailings Radiation Control Act of 1978 (1996), Hydrogen Future Act of 1996, amendments to the Energy Policy Act of 1992 (1977),

Small Business Reauthorization Act of 1997, Federal Reports Elimination Act of 1998, Energy Conservation Reauthorization Act of 1998, Energy and Water Development Appropriations Act, 1999, Omnibus Consolidated and Emergency Supplemental Appropriations Act, 1999.

- **National Climate Program Act, as Amended.** Establishes a National Climate Program for research, collection, analysis, forecasting, modeling, and dissemination of data concerning climate, its variations, and their impacts on human activities. Requires five-year plans and defines the roles of Federal agencies. Requires assessing the effects of climate on agriculture, energy supply and demand, land and water resources, transportation, human health, and national security. Requires basic and applied research and requires global data collection and climate monitoring and analysis activities. Specifies requirements for intergovernmental programs. This statute, Pub. L. 95-367, Sept. 17, 1978, 92 Stat. 601 (Title 15, Sec. 2901 et seq.), includes amendments made by the National Climate Program Act Amendments (1980), Congressional Reports Elimination Act of 1982, Consolidated Omnibus Budget Reconciliation Act of 1985.
- **Hydrogen Future Act of 1996, as Amended.** Directs the Secretary of Energy to conduct a research, development, and demonstration program leading to the production, storage, transport, and use of hydrogen for industrial, residential, transportation, and utility applications. Section 104 directs the hydrogen R&D program to give emphasis to developing an understanding and resolution of critical technical issues preventing the introduction of hydrogen, initiate or accelerate existing research in critical areas that will contribute to the development of more economic hydrogen production and use, and survey the private program office and take steps to ensure that R&D activities do not displace or compete with privately funded activities.

This Act reauthorized the Hydrogen Technical Advisory Panel, comprised of representatives of domestic industry, universities, professional societies, government laboratories, financial, environmental, and other organizations as necessary to review and make any necessary recommendations on the implementation and conduct of the DOE

programs under this Act, economic, technological, and environmental consequences for the deployment of the hydrogen systems, and comments and recommendations for improvements.

This statute, Pub.L. 104-271, Oct 9, 1996, 42 USC 12401 includes amendments made by the Spark Matsunaga Research, Development and Demonstration Act of 1990, Public law 101-566 and Energy Policy Act of 1992.

1.2.12 Interagency Activities

Although EERE's goals and objectives reflect unique roles and responsibilities, success will depend upon closely coordinated planning and the continuation of working relationships with a number of Federal agencies, State and local governments, Tribal Nations, industry, and Congress. It is especially important to recognize the complementary role other Federal agencies play in EERE's programs. The following illustrate our efforts to coordinate with other agencies to avoid duplication of effort and reduce the cost to taxpayers.

Legend:

AID = Agency for International Development
ATP = Advanced Technology Program
CIA = Central Intelligence Agency
DARPA = Defense Advanced Research Projects Agency
DOC = Department of Commerce
DoD = Department of Defense
DoEdu = Department of Education
DOI = Department of the Interior
DOJ = Department of Justice
DOT = Department of Transportation
EPA = Environmental Protection Agency
FBI = Federal Bureau of Investigation
FEMA = Federal Emergency Management Agency
FERC = Federal Energy Regulatory Commission
GSA = General Services Administration
HHS = Department of Health and Human Services
HUD = Department of Housing and Urban Development
IAEA = International Atomic Energy Agency
IEPA = Illinois Environmental Protection Agency
Labor = Department of Labor

NAS = National Academy of Sciences
NASA = National Aeronautics and Space Administration
NIH = National Institutes of Health
NIST = National Institute of Standards and Technology
NOAA = National Oceanic and Atmospheric Administration
NRC = Nuclear Regulatory Commission
NSA = National Security Agency
NSF = National Science Foundation
OMB = Office of Management and Budget
OSHA = Occupational Safety and Health Administration
OSTP = Office of Science & Technology Policy
State = Department of State
Treasury = Department of the Treasury
TVA = Tennessee Valley Authority
USDA = U.S. Department of Agriculture
USGS = U.S. Geological Survey
VA = Department of Veterans Affairs

EERE Program Office	Initiative/Activity	Federal Agency Participants
Buildings, Biomass, DE, Geothermal, Wind, Solar	Emergency Response	DoD, State, DOT, GSA, TVA, HHS, VA, NOAA, DOJ, USDA, EPA, NRC, FEMA, IAEA, National Communication System
FEMP	Greening the Government Through Efficient Efficient Energy Management	All Federal Agencies
Building Technologies	Interagency Committee on Indoor Air Quality	IEPA, HHS, OSHA, and 16 others
Industrial Technologies	Energy-related Inventions Program	DOC (NIST)
Industrial Technologies	Industries of the Future - Agriculture	DOC, DOI, EPA, NSF, USDA
Industrial Technologies	Industries of the Future - Aluminum	DOC (ATP), DoD, NSF
Industrial Technologies	Industries of the Future - Chemicals	DOC (NIST, ATP)
Industrial Technologies	Industries of the Future - Forest and Paper Products	USDA
Industrial Technologies	Industries of the Future - Glass	DOC (NIST, ATP), DoD
Industrial Technologies	Industries of the Future - Metalcasting	DoD, DOT, EPA
Industrial Technologies	Industries of the Future - Mining	DOC, DoD, DOI, EPA, HHS, Labor, NASA, USDA
Industrial Technologies	Industries of the Future - Concrete Initiative	DOC (NIST)
Industrial Technologies	Industries of the Future - Combustion	DOC (NIST), DoD, NSF
Industrial Technologies	Industries of the Future - Sensors & Controls	DOC (NIST), NSF
Industrial Technologies	Industries of the Future - Inventions & Innovations	DOC (NIST)
Industrial Technologies	Industries of the Future - Industrial Assessment Centers	Industrial Federal facilities
FreedomCAR & Vehicle Technologies	FreedomCAR	EPA, DOT, DOC, NSF, OMB
FreedomCAR & Vehicle Technologies	Greening the Government Through Federal Fleet and Transportation Efficiency	DoD, DOT, EPA and Other Federal Agencies
HFCIT	President's Commission on Critical Infrastructure Protection	Treasury, DOJ, DoD, DOC, DOT, CIA, FEMA, FBI, NSA
HFCIT	Hydroelectric	FERC, DOI (Bureau of Land Management, Bureau of Reclamation), Army Corps of Engineers, International Boundary and Water Commission
DE	Domestic Natural Gas Production	DOI (Bureau of Land Management)
DE	Advanced Turbine Systems	NASA, DOC (NIST), DoD, EPA
DE	Combined Heat and Power (Cogeneration)	EPA
DE	Electric Industry Restructuring	FERC, EPA, DOC, NRC
DE	Electric Utility Regulation	FERC, EPA, NRC, DOC, DOJ
FEMP	Federal Energy Management Program	All Major Federal Agencies
Biomass	Bioproducts/Bioenergy Initiative	USDA, DOC, OMB, DOE, OSTP, TVA, EPA
All Program Offices	Fundamental Research	NSF, DoD, USDA, NASA, NIH
International Programs— All Program Offices	Global Environmental Issues, Trade and Market Development, Energy and Environmental Security	State, EPA, AID, DOC, USDA, DOI
Planning	U.S. Global Change Research Program	USDA, NOAA, NSF, NASA, DoD, HHS, DOI (USGS), State, EPA, OMB, OSTP, Smithsonian Institution
Planning, International	U.N. Framework Convention on Climate Change	NOAA, State, EPA, USDA, DoD, AID, Treasury, DOJ, Labor
Biomass	U.S. Human Genome Project	NIH

1.2.13 State and Local Government Activities

Energy use varies substantially from region to region and from State to State. It varies as a result of population, climate, economic base, diversity of housing stock, the existing infrastructure (e.g., transportation and energy delivery systems), and other related factors. Because of this, energy needs and opportunities are not uniform across the Nation. For this reason, any strategy for the development and deployment of energy efficiency and renewable energy technologies, products, or practices should address the unique needs and opportunities presented by each State and locale. States and localities are much closer to most energy users than is the Federal government, e.g., the general public, commerce, industry, and public institutions. Over the years, State and local governments have developed considerable expertise in energy management, in outreach to the private and non-profit program offices, and in providing energy services and information. States sponsor a good deal of energy efficiency and renewable energy RD&D. They have primary responsibility for codes and standards that affect the use of energy in the building and other program offices; they are the regulators of electric and gas utilities; and (acting individually and collectively) they manage energy emergencies. For all these reasons one cornerstone of a successful EERE strategy must be strong Federal, State, and local partnerships.

Key programmatic activities in support of these partnerships are the State Energy Program (SEP), the Weatherization Assistance Program, community energy partnership grants, and a number of special-purpose competitive grants which encourage States and localities (alone or with other public- or private-sector partners), their associations, and others to implement projects that serve both national and State/local needs. The SEP provides financial and technical support to States to develop and implement energy plans that are responsive to their own needs but that also support national goals. The Weatherization program provides both financial and technical support to States and local agencies; grants are awarded to States, which in turn fund approximately 900 local service provider agencies (mostly Community Action Agencies), which provide for the installation of energy- (and energy-cost) saving measures in the homes of eligible low-income clients. Through the SEP and Weatherization programs (administered through the six EERE Regional Offices), EERE maintains close working relationships with the State Energy Offices and the

State grantee agencies for the Weatherization program. At the national level, EERE also maintains close working relationships with the National Association of State Energy Officials, which represents the State Energy Office Directors; the National Association of State Community Service Programs, representing the State Weatherization directors; and the National Community Action Foundation, the association representing the local Weatherization service providers. Other organizations with which we maintain ties include the National Conference of State Legislatures, the Urban Consortium Energy Task Force, the National Association of Counties, the National Governor's Association, the National League of Cities, and the Conference of Mayors. We recently began meeting with an umbrella group formed to represent local government associations on energy matters.

Another area of cooperation is in research and development. Examples include the recently executed Memoranda of Understanding (MOU) with the California Energy Commission, the New York State Energy Research and Development Authority, and the Association of State Energy Research and Technology Transfer Institutions to work on research projects of mutual interest, through direct contracts and through the DOE national laboratories. EERE and the States have agreed to work together on the following issues: biobased products and bioenergy, fuel cells and microturbines, petroleum industry, schools, combined heat and power and distributed generation, data acquisition, and transportation.

Collaboration between the national laboratories and State RD&D activities (particularly in terms of coordinating research agendas, avoiding duplication, and deploying technology) has been one of the topics in which the State Energy Advisory Board (STEAB) has taken a strong interest. STEAB was established by P.L. 101-440 to advise the Department and Congress on the operation of EERE programs, technology deployment, and related issues. The Board, through its Strategic Planning and Budget Committee, has begun to provide early input and advice to EERE on budget priorities. STEAB has been very proactive on a range of other issues ranging from Regional Office mission and structure to utility deregulation/restructuring. In addition to public meetings and day-to-day working contacts with EERE, the Board submits an annual report to the Secretary and Congress.

Much of the interaction between EERE and individual States and localities takes place through the six EERE Regional Offices.

These offices assist in grant administration, undertake outreach and liaison to State and local governments in their regions, provide or coordinate the delivery of technical assistance, and provide technology deployment assistance. They have well-established relationships with State and local governments, regional commerce and industry, and local EERE customers and stakeholders. They provide an initial point of contact (and are often an aggregator of services) for State and local governments in dealing with EERE's program office offices.

Several administrative barriers, such as Federal, State, and local contracting and procurement regulations and different requirements and forms for different parts of DOE have made it difficult to execute instruments of agreement between Federal and State governments. In 1998 and 1999, the Department of Energy initiated negotiations with various State organizations to establish model agreements to address these problems. These negotiations resulted in two model agreements generally applicable to most State governments and State institutions and one model agreement specifically applicable to the California Energy Commission. The implementation of these agreements has improved the ability of Federal and State governments to work on mutually agreed-upon projects. These model agreements were developed to promote ongoing and future cooperative efforts between DOE and State governments and institutions and to expedite the contracting process.

1.2.14 Stakeholders

The attached list of stakeholders includes some organizations that have been traditional supporters of selected EERE programs. Most are nonprofit groups. The groups generally support the EERE budget request to the Congress through testimony and informational visits. Each seeks to ensure that its technology needs receive sufficient funding. The challenge is to ensure that, as each group works to gain support for their particular area of interest, they do not as a whole, work against the larger interest of all EERE programs. Meeting with the organizations, both individually and in small groups, will help ensure that all understand the mission and goals of the overall EERE research and development portfolio.

Some EERE Stakeholders (alphabetically listed)

- Agricultural Research Institute
- Air Movement and Control Association
- Alliance to Save Energy
- Aluminum Association
- American Association of Railroads
- American Bioenergy Association
- American Boiler Manufacturers Association
- American Ceramic Society
- American Chemical Society
- American Chemistry Council
- American Concrete Institute
- American Council for an Energy-Efficient Environment
- American Farm Bureau
- American Flame Research Committee
- American Forest & Paper Association
- American Gas Association
- American Institute of Chemical Engineers
- American Iron & Steel Institute
- American National Standards Institute
- American Portland Cement Alliance
- American Public Power Association
- American Pulp and Paper Institute
- American Solar Energy Society
- American Soybean Association/United Soybean Board
- American Trucking Association
- American Welding Society
- American Wind Energy Association
- Americans for Clean Energy
- ASM International Heat Treating Society
- Association of Iron and Steel Engineers
- Business Council for Sustainable Energy
- California Trucking Association
- Carbon Product Consortium
- Cast Metal Coalition
- Center for Clean Air Policy

- Clean Fuels Development Coalition
- Combustion Institutes
- Compressed Air and Gas Institute
- Compressed Air Challenge
- Compressor Distributors Association
- Coordinating Research Council
- Copper Development Association
- Corn Refiners Association
- Cotton Foundation
- Council for Agricultural Science and Technology
- Council for Chemical Research
- Council of Industrial Boiler Owners
- Council on Superconductivity for American Competitiveness
- Edison Electric Institute
- Electric Power Research Institute
- Electric Transportation Coalition
- Electrical Apparatus Service Association
- Energy Storage Association
- Engine Manufacturing Association
- Environmental Defense Fund
- Forging Industry Association
- Gas Technology Institute
- Gasification Technologies Council
- Geothermal Energy Association
- Geothermal Heat Pump Consortium, Inc.
- Geothermal Resources Association
- Glass Manufacturing Industry Council
- Glass Packaging Institute
- Hydraulic Institute
- Industrial Center, Inc.
- Industrial Heating Equipment Association
- Industrial Process Heating
- Institute for Local Self-Reliance
- Institute of Electrical and Electronics Engineers
- International Copper Development Association
- International Fund for Renewable Energy and Energy

Efficiency

- Iron and Steel Society
- ISA, International Society for Measurement and Control
- Johnson Controls
- Manufacturers of Emission Control Association
- Materials Technology Institute of the Chemical Process Industries
- Maytag Corporation
- Measurement, Control and Automation Association
- Metal Powders Industry Foundation
- Minerals, Metals Materials Society
- National Aggregate/Stone Association
- National Association of Energy Service Companies
- National Association of Regulatory Utility Commissioners
- National Association of State Energy Officials
- National Association of State Universities and Land-Grant Colleges
- National Association of Wheat Growers
- National Corn Growers Association
- National Council for Air and Steam Improvements
- National Electrical Manufacturers Association
- National Hay Association
- National Hydropower Association
- National Insulation Association
- National Mining Association
- Natural Gas R&D Forum
- Natural Gas Vehicle Coalition
- Natural Resources Defense Council
- New Uses Council
- North American Insulation Manufacturing Association
- Northwest Mining Association
- Pellet Fuels Institute
- Primary Glass Manufacturing Coalition
- Ready Mixed Concrete Association
- Renewable Fuels Association
- Safe Energy Communication Council

- Solar Turbines, Inc.
- Solar Unity Network
- Steel Manufacturers Association
- Sugar Processing Research Institute
- Synthetic Organic Chemical Manufacturers Association
- Technical Association of the Pulp and Paper Industry
- Truck Manufacturing Association
- United States Advanced Battery Consortium
- United States Advanced Ceramics Association
- USCAR

1.2.15 Legislative Relationships

Congressional Committees

EERE is the only non-defense office within the Department, that receives appropriations from two separate subcommittees, the Interior and Related Agencies Appropriations Subcommittee (approximately two-thirds of the budget), and the Energy and Water Development Appropriations Subcommittee (approximately one-third of the budget). This joint funding arrangement means that the Assistant Secretary has “double duty” with regard to hearings. EERE is within the jurisdiction of the following Congressional authorizing committees: Senate Energy and Natural Resources, House Science (all research, development, and selected deployment activities), and House Energy & Commerce Committee (State Energy Program, Weatherization Assistance Program, Federal Management Program, and selected deployment activities). Overlapping jurisdictions regarding deployment activities among authorizing committees can present problems during legislative consideration. Generally, these problems are resolved by the House Parliamentarian.

Key Members In 2004

Appropriations Subcommittees

- Senator Ted Stevens (R-AK), Chairman of the full Senate Appropriations Committee
- Senator Robert C. Byrd (D-WV), Ranking Minority Member of the full Senate Appropriations Committee

- Senator Conrad Burns (R-MT), Chairman of the Interior and Related Agencies Appropriations Subcommittee
- Senator Byron Dorgan (D-ND), Ranking Minority Member of the Interior and Related Agencies Appropriations Subcommittee
- Senator Pete V. Domenici, (R-NM), Chairman of the Senate Energy and Water Development Appropriations Subcommittee
- Senator Harry Reid (D-NV), Ranking Member of the Energy and Water Development Subcommittee
- Rep. C.W. Bill Young (R-10th FL), Chairman of the full House Appropriations Committee
- Rep. David R. Obey (D-7th WI), Ranking Member of the full House Appropriations Committee
- Rep. Charles H. Taylor (R-11th NC), Chairman of the Interior and Related Agencies Subcommittee
- Rep. Norm Dicks (D-6th WA), Ranking Member of the Interior and Related Agencies Subcommittee
- Rep. David L. Hobson (R- 7th OH), Chairman of the Energy and Water Development Appropriations Subcommittee.
- Rep. Peter J. Visclosky (D-1st IN), Ranking Member of the Energy and Water Development Appropriations Subcommittee

Authorizing Committees

- Senator Jeff Bingaman (D-NM), Ranking Minority Member of the Energy and Natural Resources Committee
- Senator Pete V. Domenici (R-NM), Chairman of the Energy and Natural Resources Committee
- Rep. Sherwood L. Boehlert (R-23rd NY), Chairman of the House Science Committee
- Rep. Ralph Hall (D- 4th TX), Ranking Minority Member of the House Science Committee

- Rep. W.J. “Billy” Tauzin (R-3rd LA), Chairman of the House Energy and Commerce Committee
- Rep. John D. Dingell (D-15th MI), Ranking Minority Member of the House Energy and Commerce Committee

Other Interested Members of Congress

- Senator James Jeffords (I-VT), supporter of increased appropriations for EERE
- Senator Tom Harkin (D-IA), strong supporter of renewables such as hydrogen
- Rep. Mark Udall (D-2nd CO), a freshman, has been a strong advocate of EERE
- Rep. Sherwood Boehlert (R-23rd NY), strong supporter of all EERE programs, but particularly transportation programs

References:

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http://www.eere.energy.gov/office_eere/pdfs/fy02_strategic_plan.pdf
- *U.S. Department of Energy Strategic Plan*, Washington, D.C., September 2003.
<http://strategicplan.doe.gov/>
- *National Energy Policy*, Report of the National Energy Policy Development Group, Washington, D.C., May 2001.
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- *U.S. Department of Energy*, Energy Efficiency and Renewable Energy, Regional Offices, DOE/EE-0248, Washington, D.C., 2001.
- U.S. Senate: http://www.senate.gov/pagelayout/committees/d_three_sections_with_teasers/committees_home.htm
- U.S. House of Representatives: <http://www.house.gov/house/CommitteeWWW.html>

Web Pages:

DOE Home: <http://www.energy.gov/>

EERE Home: <http://www.eere.energy.gov/>

OBA Home: http://www.eere.energy.gov/office_eere/ba/

OBP Home: <http://www.eere.energy.gov/biomass.html>

OBT Home: <http://www.eere.energy.gov/building.html>

ODE Home: <http://www.eere.energy.gov/deer.html>

FEMP Home: <http://www.eere.energy.gov/femp.html>

OFCTT Home: <http://www.eere.energy.gov/vehiclesandfuels/>

OGT Home: <http://www.eere.energy.gov/geothermal.html>

OHFCIT Home: <http://www.eere.energy.gov/hydrogenandfuelcells/>

ITP Home: <http://www.eere.energy.gov/industrial.html>

OSET Home: <http://www.eere.energy.gov/solar.html>

OWHT Home: <http://www.eere.energy.gov/windandhydro/>

OWI Home: <http://www.eere.energy.gov/weatherization.html>

Golden Field Home: <http://www.go.doe.gov/>

Regional Offices Home: <http://www.eere.energy.gov/rso.html>

